

# DIGISTOR®

SECURE DATA STORAGE

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## Citadel SSD

User Manual

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**FCC Compliance Statement:** This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

In the event that you experience Radio Frequency Interference, you should take the following steps to resolve the problem:

1. Ensure that the case of your attached drive is grounded.
2. Use a data cable with RFI reducing ferrites on each end.
3. Use a power supply with an RFI reducing ferrite approximately 5 inches from the DC plug.
4. Reorient or relocate the receiving antenna.

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# 1. INTRODUCTION

DIGISTOR Citadel SSDs protect against unauthorized access using CipherDrive pre-boot authentication (PBA) built into the self-encrypting drive. Each Citadel self-encrypting drive (SED) is FIPS certified and is the only SSD brand that has PBA natively built-in.

Once fully set up and configured, the Citadel SSD will require you to securely authenticate access to the drive before any operating system or virtual machine stored on the SSD can start up. Then after you authenticate and sign in, changes can be made to the drive in real-time until the host computer is powered off.

This User Manual will help you install the Citadel SSD and activate it for use. It also includes instructions for using the PBA's Settings Console, including managing users and user roles and configuring the PBA for smart card or password access.

## 1.1. SAFETY INFORMATION

Please read the following before handling this product.

1. Do not drop the product, submit it to impact, or pierce it.
2. The circuit boards within this product are susceptible to static electricity. Proper grounding is strongly recommended to prevent electrical damage to the product or other connected devices, including the computer host.
3. Avoid placing this product close to magnetic devices, high voltage devices, or in an area exposed to heat, flame, direct sunlight, dampness, moisture, rain, vibration, shock, dust, or sand.
4. To avoid overheating, this product should be operated in a well-ventilated area.
5. Before starting any type of hardware installation, please ensure that all power switches have been turned off and all power cords have been disconnected to prevent personal injury and damage to the hardware.

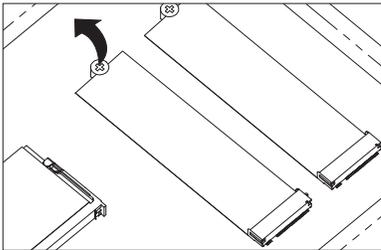
## 2. DRIVE INSTALLATION

These instructions will help you install the Citadel SSD into your computer. If you purchased a computer with a Citadel SSD pre-installed, you can skip this section.

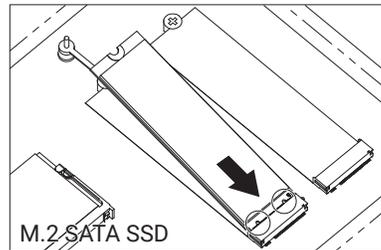
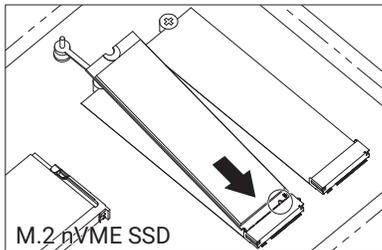
Choose the installation instructions appropriate to the type of Citadel SSD you have.

### 2.1. M.2 SSDS (NVME OR SATA)

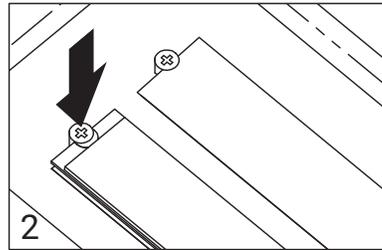
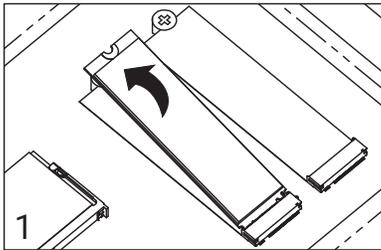
1. Remove the screw from the SSD slot you intend to use if there is one present.



2. Insert the Citadel SSD into an open M.2 slot in your computer. Be sure to align the notch(es) on the gold contacts of the SSD module with the notch(es) on the empty slot.



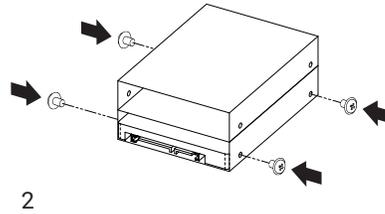
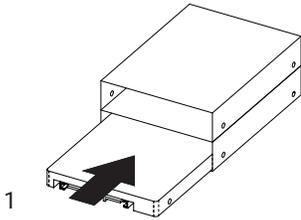
3. Secure the Citadel SSD. Hold the Citadel SSD flat against the slot bay (Figure 1) and reinsert the screw back into the rear of the slot (Figure 2).



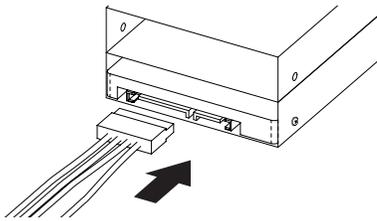
The Citadel SSD must now be activated. Please continue to the next section (see [Section 3: Activate the Citadel SSD, page 8](#)).

## 2.2. 2.5-INCH SATA SSD

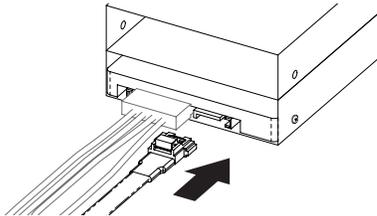
1. Insert the Citadel SSD into an open 2.5-inch drive bay in your computer (Figure 1). Then secure the Citadel SSD with four screws (Figure 2) or via the computer chassis' built-in tension clip.



2. Attach a SATA power connector from your computer to the SATA power port on the rear of the Citadel SSD.



3. Attach a SATA data cable to the SATA port on the rear end of the Citadel SSD and the other end to the computer's motherboard.



The Citadel SSD must now be activated. Please continue to the next section (see [Section 3: Activate the Citadel SSD, page 8](#)).

## 3. ACTIVATE THE CITADEL SSD

Your DIGISTOR Citadel SSD, with its pre-boot authentication (PBA) and self-encrypting drive capabilities, is sent from the manufacturer with the PBA capability temporarily deactivated so that you can easily install an operating system or virtual machine.

These instructions will show you how to create a bootable USB thumb drive, when to install your operating system or virtual machine during this process, and how to activate the Citadel SSD's PBA capability.

### 3.1. DOWNLOAD THE ACTIVATION SOFTWARE

Download the Citadel SSD activation software from [cru.bz/citadel](http://cru.bz/citadel) and save it to a place on your computer. This download should be located at the top of the page.

### 3.2. CREATE A BOOTABLE USB THUMB DRIVE

1. Insert a USB thumb drive into your computer.
2. Format a USB thumb drive to the FAT32 file system.



#### CAUTION

Be sure you backup any files on the drive because they will be erased!



#### IMPORTANT

Ensure that no other partitions or files exist on the thumb drive! If you have multiple partitions on the thumb drive, you may have to use other tools to delete them such as "Disk Management" which is built into Windows 8.1 and Windows 10.

3. Open the ZIP file you downloaded and extract the "USB Digistor Activator V11 - Foxtrot" folder to your computer.
4. Navigate into the "USB Digistor Activator V11 - Foxtrot" folder. Copy the contents of the folder to the thumb drive.



#### IMPORTANT

Do not copy the "USB Digistor Activator V11 - Foxtrot" folder itself over to the thumb drive. Your system will be unable to boot from it if you do.

You now have a bootable thumb drive. If you require more help, please contact Technical Support. See [Product Support](#).

### 3.3. CONFIGURE UEFI/BIOS SETTINGS

You will need to properly configure your BIOS or UEFI in order to properly boot from the thumb drive. To do so, follow the instruction set below that's applicable to your situation. Specific instructions have been provided for Dell computers, as well as a generic instruction set for all other computers.

### 3.3.1. FOR ALL COMPUTERS

Follow these steps to ensure your computer's BIOS or UEFI settings are configured correctly. To access the BIOS or UEFI, you may have to press **Delete**, **Esc**, **F2**, or **F12** when starting your computer up.

1. If you have an option for "UEFI Boot Path Security" or something like it, be sure to change it to **Never**.
2. Ensure that your "SATA Operation" is set to **AHCI**.
3. If you have a discrete video card, ensure your primary display detection is set to **Auto**.
4. Disable "Secure Boot".



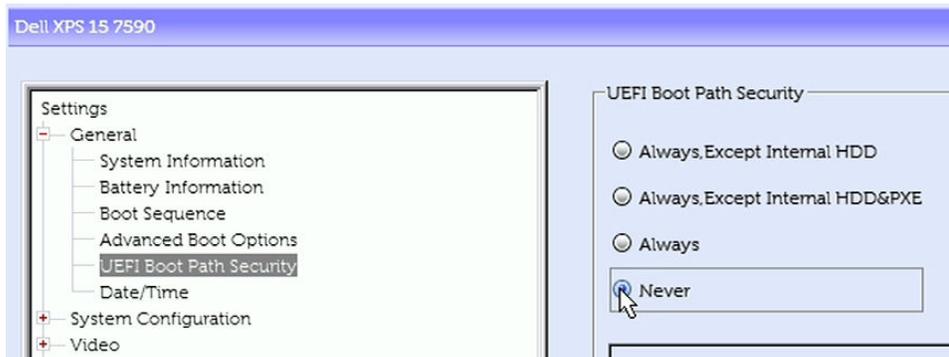
#### NOTE

The Citadel SSD **does** support Secure Boot, but only once activated. You may reenable Secure Boot after you finish reactivating the Citadel SSD.

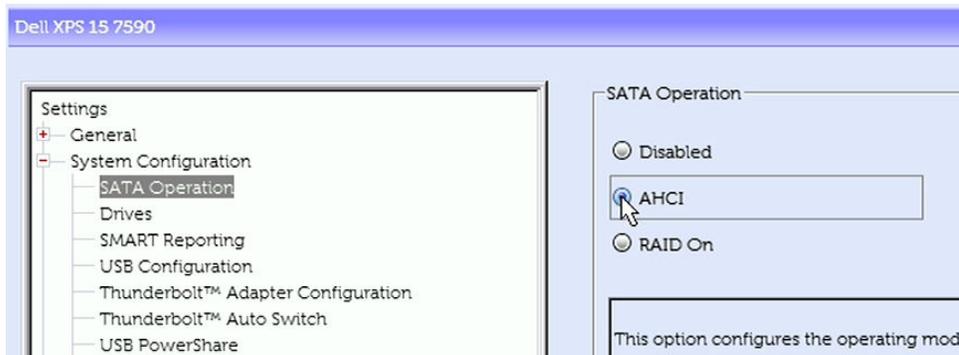
### 3.3.2. FOR DELL COMPUTERS

Follow these steps to ensure your Dell computer's UEFI settings are configured correctly. To access the UEFI, you may have to press **F2** or **F12** when starting your computer up.

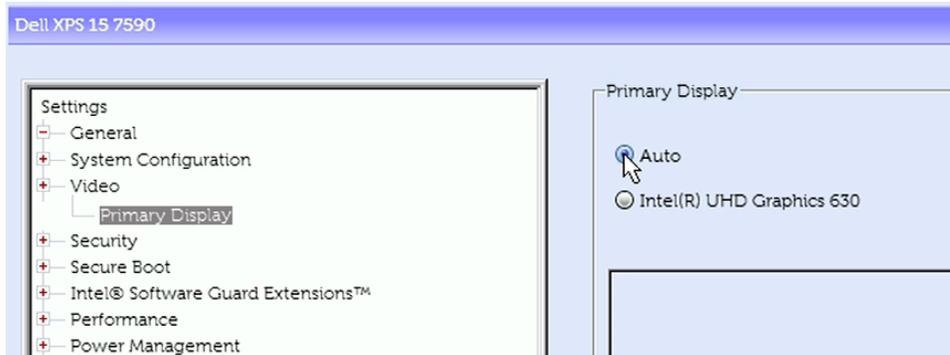
1. Navigate to "General > UEFI Boot Path Security" and change it to **Never**.



2. Navigate to "System Configuration > SATA Operation" and change it to **AHCI**.



3. If your Dell computer has an upgraded video card, navigate to "Video > Primary Display" and ensure it is set to **Auto**. Otherwise, this option will not be available and you can continue onto the next step.

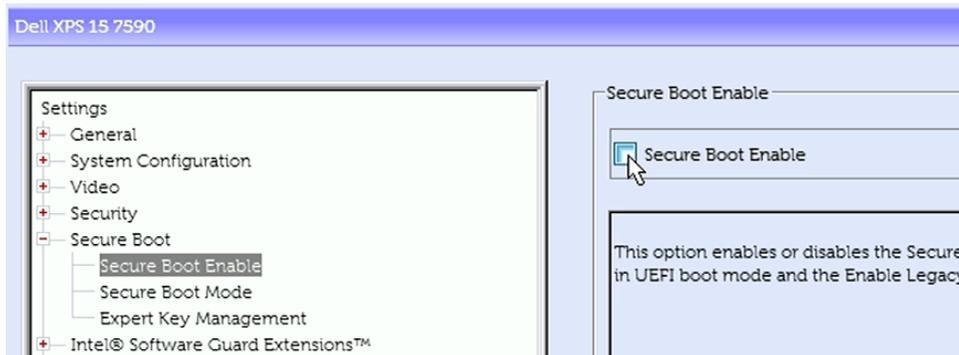


- Navigate to "Secure Boot > Secure Boot Enable" and **uncheck the box** next to the "Secure Boot" option to disable it. A dialog box may pop up warning you that disabling Secure Boot will reduce system security. Click **Yes** to disable it.



#### NOTE

The Citadel SSD **does** support Secure Boot, but only once activated. You may reenables Secure Boot after you finish activating the Citadel SSD.



## 3.4. INSTALL AN OPERATING SYSTEM OR VIRTUAL ENVIRONMENT

Your Citadel SSD has been shipped to you deactivated and unlocked. Install any operating system (OS) or virtual machine (VM) at this time.



#### TIP

If you need to turn on a Trusted Platform Module (TPM), Virtualization Support, or Trusted Execution, you can turn them on in the UEFI.

After you have installed the OS or VM, perform a cold reboot by turning your computer off and back on again and test the OS or VM.

### 3.5. HOW TO BOOT INTO THE THUMB DRIVE

1. Insert the bootable USB drive with the Citadel SSD software into the computer and turn it on.
2. Continually press the key for accessing your motherboard's boot menu while the computer starts up. This key to access it differs on different models, but the most common keys are **F2**, **F10**, **F12**, or **Esc**.
3. The motherboard's boot menu will appear. Choose the USB thumb drive from the list of boot options.
4. A Linux BASH prompt will load. Press **Enter** to activate the console.

### 3.6. ACTIVATE THE CITADEL SSD

1. Boot into the thumb drive using the steps above. See [Section : How to Boot into the Thumb Drive, page 32](#).
2. Type in the command below to run the activation software. Please note that the following text is case sensitive.

**CitadelStart -p <password>**



#### NOTE

**<password>** is the Administrator password. The default Administrator password is **Administrator**, and it is *case-sensitive*.



#### IMPORTANT

If you are using the default Administrator password, you should change it as soon as possible by logging into the Citadel SSD Settings Console.

```
Loading CDO Application

Please press Enter to activate this console.
# CitadelStart -p Administrator

Disk is in deactivated state:/dev/sda
CipherDrive is being activated. Please wait...

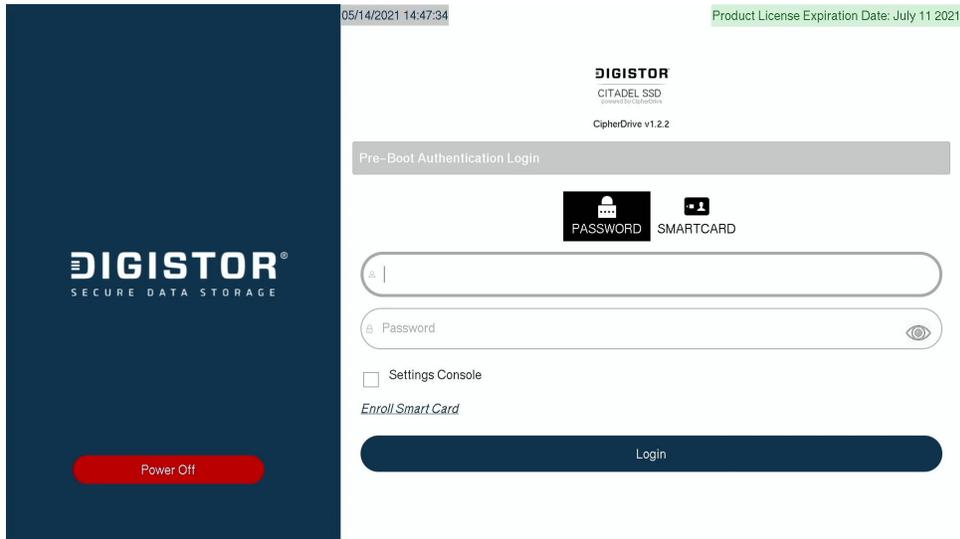
Configuring Locking Range...
Configuring MBR Control...

CipherDrive has been successfully activated.
Auto shut down initiated.
The system is going down NOW!
Sent SIGTERM to all processes
Sent SIGKILL to all processes
Requesting system poweroff
```

3. The software will activate the pre-boot authentication and will automatically shut down the computer when finished. Remove the USB thumb drive and reboot the system.

The Citadel SSD has been activated!

## 4. FIRST TIME LOGIN



### IMPORTANT

Before attempting to log in, make sure you have first activated your Citadel SSD. See [Section 3: Activate the Citadel SSD, page 8](#).

1. If you haven't already, turn on the computer. The Citadel SSD software will load.
2. Click the **Accept** button at the bottom of the Disclaimer screen that appears.
3. Log into the default Administrator account. Use the following credentials, which are case sensitive:
  - Username: **Administrator**
  - Password: **Administrator**



### NOTE

Usernames and passwords are case sensitive.

The computer will appear to reboot and your OS or VM will now start up.

## 5. PRE-BOOT AUTHENTICATION INTERFACE

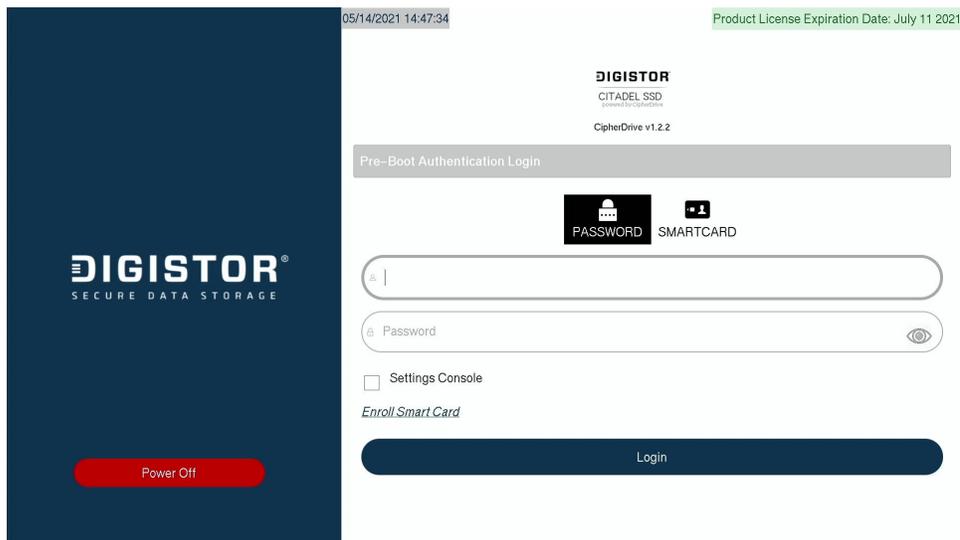
The PBA Interface consists of the **Login Screen** and the **Settings Console**, which you can optionally choose to enter from the Login Screen instead of booting into your computer's operating system or virtual machine.

The Settings Console allows you to view data and logs about the PBA, edit your user profile, and allows users with the Administrator or Security Officer roles to perform various administrative and maintenance tasks.

### 5.1. LOGGING IN

#### 5.1.1. LOGGING IN WITH A USERNAME AND PASSWORD

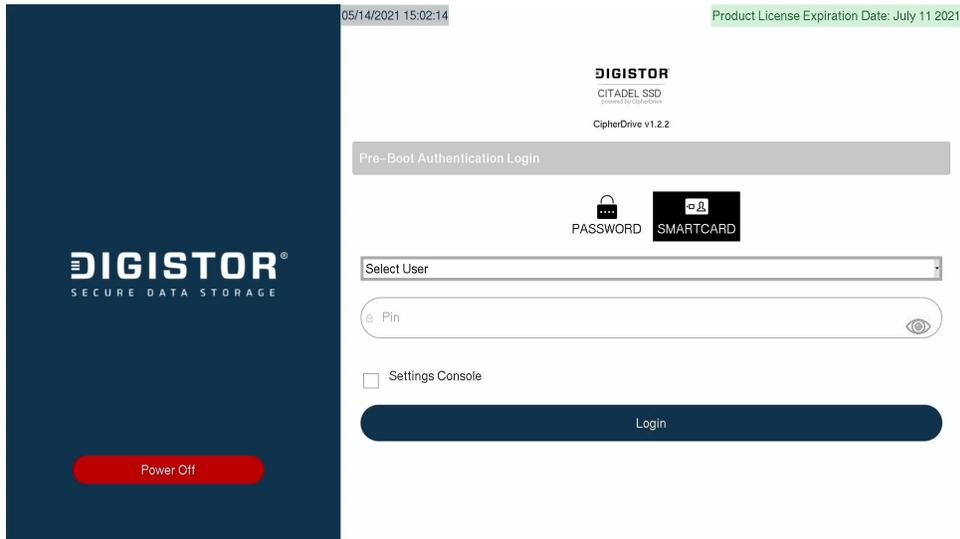
1. Power the computer on. The computer will boot into the Citadel SSD's pre-boot authorization screen.



2. Make sure the **Password button** is selected.
3. Type the default username and password into the "Username" and "Password" fields, respectively.
4. If allowed by policy, you can check **Remember Me** so the software will remember your username between logins.
5. If you want to load into the Dashboard instead of your operating system, check **Settings Console**. Otherwise, leave it unchecked.
6. Click the **Login button**.

You will now be logged in.

## 5.1.2. LOGGING IN WITH A SMART CARD



1. Power the computer on. The computer will boot into the Citadel SSD's pre-boot authorization screen.
2. Insert the smart card into the card reader.
3. Make sure the **Smart Card button** is selected.
4. Select the username from the drop-down menu.



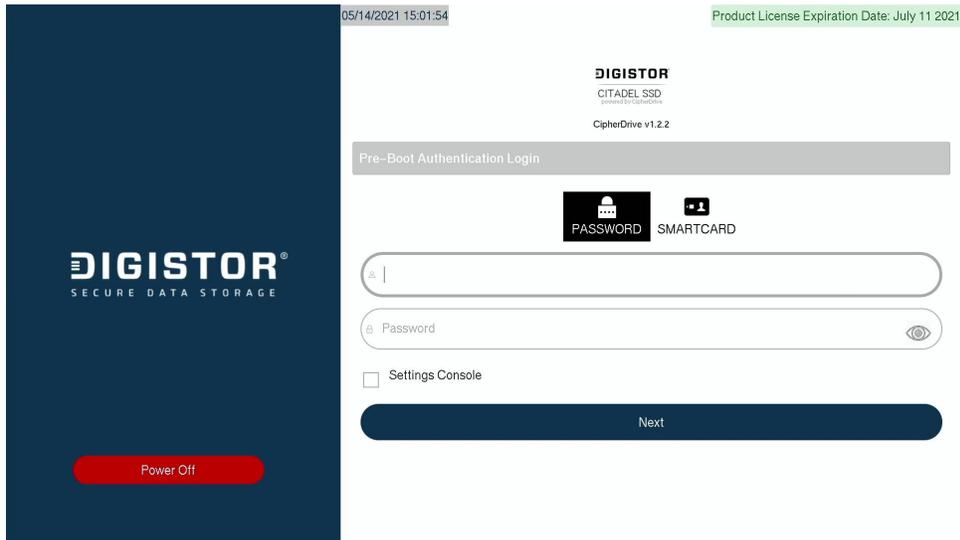
### NOTE

The usernames in the menu are pulled from the installed certificates on the smart card.

5. Enter the PIN for the card.
6. If you have an administrator account and you want to load into the Dashboard instead of your operating system, check **Settings Console**. Otherwise, leave it unchecked.
7. Click the **Login button**.

You will now be logged in.

### 5.1.3. LOGGING IN WITH TWO-FACTOR AUTHENTICATION



When two-factor authentication is enabled, the user is required to use both the password and smart card login methods.

1. Power the computer on. The computer will boot into the Citadel SSD's pre-boot authorization screen.
2. Type the default username and password into the "Username" and "Password" fields, respectively.
3. If allowed by policy, you can check **Remember Me** so the software will remember your username between logins.
4. Click the **Next button**. The Smart Card login screen will now appear.
5. Select the username from the drop-down menu.



#### NOTE

The usernames in the menu are pulled from the installed certificates on the smart card.

6. Enter the PIN for the card.
7. If you have an administrator account and you want to load into the Dashboard instead of your operating system, check **Settings Console**. Otherwise, leave it unchecked.



#### NOTE

A single-factor SmartCard user will only be able to configure Login and viewing options such as Logs. Only users with a password will be able to access the full suite of management features.

8. Click the **Login button**.

You will now be logged in.



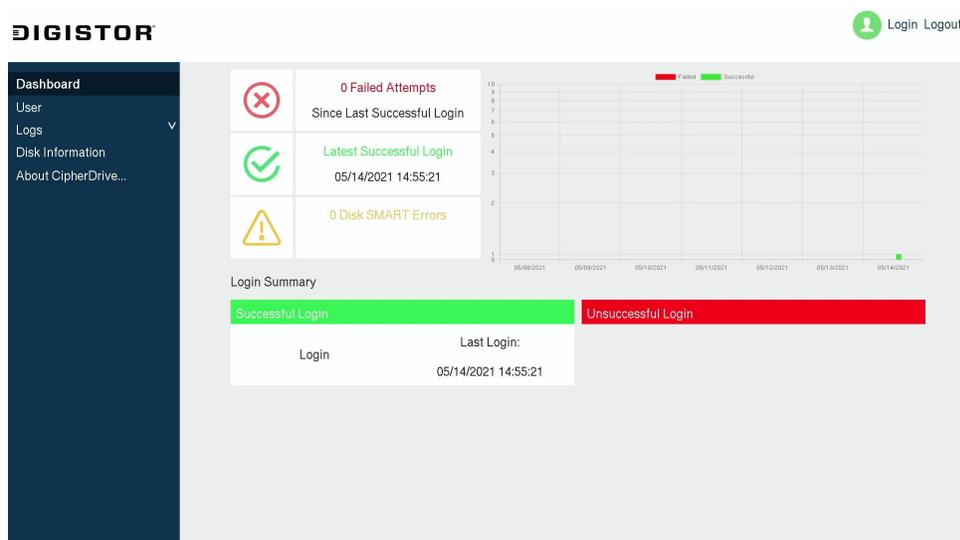
## WARNING

If you've enabled this setting without having an account set up with both a password and smart card, you will be unable to log in or access the Settings Console. You will need to use the Administrator Backdoor method to log in or access Settings Console. See [Section 6.2: Administrator Backdoor](#), page 44.

## 5.2. LOGGING OUT

You can log out from the Settings Console by clicking the **Logout button** on the top right of the screen at any time. This will take you back to the login screen so you can log in and proceed to your operating system.

## 5.3. DASHBOARD



The "Dashboard" screen shows a quick overview of the following events:

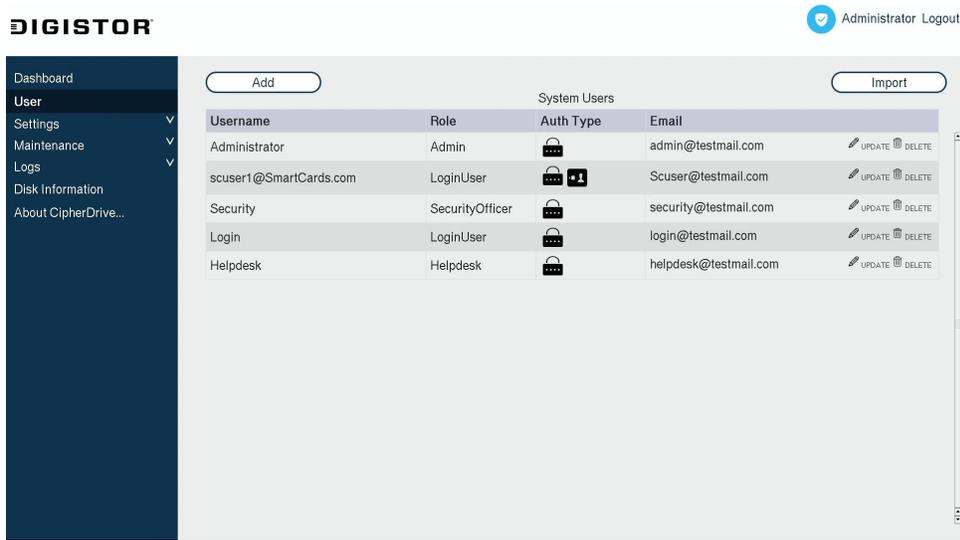
- Number of failed login attempts since the last successful login
- Last successful login time and date
- S.M.A.R.T. error count reported by the disk
- Graph of the previous seven (7) days of failed, successful, and total login attempts
- The last successful and unsuccessful login attempts of distinct users



## NOTE

Admin and Security Officer accounts can view the successful and failed attempts of all users.

## 5.4. USER



The "User" screen allows you to add a new user account, delete an account, or modify an existing account.

### 5.4.1. USER ROLES

Here are the available user roles (user account types) and what each is allowed to do:

User Role	Add User Account	Update User Account	Delete User Account	Purge Logs	Erase Disk	Change DEK* or AK*	Upgrade, Deactivate or Uninstall PBA*	License Upgrade
Login User		Own Account Only						
Help Desk		Login & Help Desk Accounts Only	.					
Security Officer		.	.	.	.	.		
Administrator	.	.	.		.	.	.	.

\*DEK means "Data Encryption Key", AK means "Authentication Key", and PBA means "Pre-boot Authentication"

### 5.4.2. ADD A USER

## ADD A USER WITH A PASSWORD

Add User

PASSWORD SMART CARD

- Select a primary authentication method—one only:
  1. Username/Password Recommended
  2. Smartcard
- For Multi-Factor Authentication, you can add a second method in the UPDATE after you save this user.

Username

Password

Confirm Password

Assign Role

Email

Save

1. On the "User" screen, click the **Add button**.
2. Make sure the **Password tab** is selected.
3. Enter a unique username for the user account in the **Username field**.



### IMPORTANT

The username must be less than 40 characters. Uppercase, lowercase, numbers, and special characters are allowed.

4. Enter the initial password for the account in the **Password field**.



### IMPORTANT

The password must be less than 128 characters. Uppercase, lowercase, numbers, and special characters are allowed.

5. Re-enter the password in the **Confirm Password field**.
6. Select the user role from the **Assign Role drop-down box**.
7. Enter the email address to be associated with the user account in the **Email field**.
8. Click the **Save button**.
9. A new window will pop up. Enter your password in the appropriate field and click **Continue** to verify that you have registered the credentials correctly.

The user account is now ready for use.

## ADD A USER WITH A SMART CARD

Add User
✕

PASSWORD

SMART CARD

- Select a primary authentication method—one only:
  1. Username/Password Recommended
  2. Smartcard
- For Multi-Factor Authentication, you can add a second method in the UPDATE after you save this user.

None

▾

Assign Role

▾

Save



### NOTE

A single-factor SmartCard user will only be able to configure Login and viewing options such as Logs. Only users with a password will be able to access the full suite of management features.

1. Make sure you have access to the card as well as the PIN for the card.
2. On the "User" screen, click the **Add button**.
3. Make sure the **Smart Card tab** is selected.
4. Insert the smart card into the card reader.
5. Select the username to be registered with the software from the drop-down menu at the top of the window. This list shows all the usernames contained on the smart card.
6. Enter the PIN into the **PIN field**.



### IMPORTANT

The PIN must be less than 20 characters long.

7. Re-enter the PIN into the **Confirm PIN field**.
8. Select the user role from the **Assign Role drop-down box**.
9. Enter the email address to be associated with the user account in the **Email field**.
10. Click the **Save button**.

11. A new window will pop up. Enter your password in the appropriate field and click **Continue** to verify that you have registered the credentials correctly.

The user account is now ready for use.

## BULK IMPORT USERS



The "Import" function lets you quickly import a set of users to multiple non-networked (air-gapped) systems so you don't have to manually add them one by one to each system.

1. On the "User" screen, click the **Import button** in the top right to open the "Import Users" dialog box.
2. Select the device from the **Device Name drop-down box** to find the USB thumb drive or external hard drive containing the list of users you want to import.



### NOTE

If you need to create a list, see [How to Create a Bulk User Import File](#).

3. Click the **Choose File button** and select the list of users you want to import. It will be formatted as a TXT file.
4. Click the **Import Users button**. The users in the TXT file will now be imported onto the PBA.



### TIP

Another way to add users is to fully configure a system with a set of users with their valid credentials and then export an encrypted copy that can be imported in another computer. See Export Configuration section. [CROSSREFERENCE]

### 5.4.3. EDIT A USER

#### EDIT A USER WITH A PASSWORD

Update

PASSWORD SMART CARD

- Change/reset passwords
- Add a Smart Card
  - To add a smart card, the user password and smart card PIN must be updated together. All fields must be filled out.

scuser1@SmartCards.com

Password

Confirm Password

LoginUser

Scuser@testmail.com

Save

1. On the "User" screen, locate the user account you wish to edit and then click the **Edit button** next to it.
2. The "Edit User" window will open. Ensure the **Password tab** is selected.
3. Modify the information you need to change or update.
  - If you are an Admin or Security Officer, you can modify the user's password, role, and email address.
  - If you are a Help Desk user, you can modify the user's password and email address.
  - If you are a standard Login User, you can edit your own password and email address.
4. When you are finished, click the **Save button**.
5. A new window will pop up. Enter your password in the appropriate field and click **Continue** to verify that you have registered the credentials correctly.

## EDIT A USER WITH A SMART CARD

1. On the "User" screen, locate the user account you wish to edit and then click the **Edit button** next to it. If you are a Login User you can only edit your own account.
2. The "Edit User" window will open. Ensure the **Smart Card tab** is selected.



### IMPORTANT

Only users who log in via a password are able to edit smart card users.

3. Modify the information you need to change or update.
  - If you are an Admin or Security Officer, you can modify the user's password, role, and email address.
  - If you are a Help Desk user, you can modify the user's password and email address.
  - If you are a standard Login User, you can edit your own password and email address.
4. When you are finished, click the **Save button**.
5. A new window will pop up. Enter your password in the appropriate field and click **Continue** to verify that you have registered the credentials correctly.

## 5.4.4. DELETE A USER

1. On the "User" screen, locate the user account you wish to delete and then click the **Delete button** next to it.
2. A confirmation dialog box will appear, asking if you're user you want to delete the user. Click **Yes**.

The user will now be deleted.

## 5.5. SETTINGS

### 5.5.1. CONFIGURATION

**DIGISTOR** Administrator Logout

Dashboard  
User  
Settings  
**Configuration**  
Maintenance  
Logs  
Disk Information  
About CipherDrive...

Settings - Configuration

Failed Logins Before Lockout:  (1-20)

Maximum Log File Size:  kb

Maximum Log Retention Duration:  Months

Password Complexity:  1+ Uppercase  1+ Numeric  
 1+ Lowercase  1+ Sp. Character

Password History:  (1-10)

Show Remember Me:  Yes  No

Show Disclaimer Before Login:  Yes  No

Enforce 2-Factor Authentication:  Yes  No

Dead Man's Switch Code:  Enable

OS Chain-loader:  Chainboot type 1

The "Configuration" page allows you to view and customize the following settings that determine how the Citadel SSD PBA behaves. When you are finished, click the **Save button** to save your changes.

- **Failed Logins Before Lockout:** When a user reaches this number of consecutive failed login attempts, further login is disabled until the system is rebooted.
- **Maximum Log File Size:** The maximum size the log file is allowed to be. The oldest records will be deleted to ensure the log file stays under this file size.
- **Maximum Log Retention Duration:** The amount of time the oldest logs will be kept.



#### NOTE

Logs are retained based on whichever condition (Maximum Log File Size or Maximum Log Retention Duration) occurs earlier.

- **Password Complexity:** Check these boxes to enforce different levels of password complexity.
  - **1+ Uppercase:** Requires passwords to have at least one uppercase character.
  - **1+ Lowercase:** Requires passwords to have at least one lowercase character.
  - **1+ Numeric:** Requires passwords to have at least one numeral.
  - **1+ Sp. Character:** Requires passwords to have at least one special character, which include @, %, \$, !, and so on.
- **Password History:** The number of previously used unique passwords that should be remembered by the system before a user can use the same password again.
- **Show Remember Me:** Select **Yes** to enable usernames to be remembered in between sessions. Select **No** to disable this behavior.

**NOTE**

This setting does *not* remember passwords.

- **Show Legal Notice Before Login:** Select **Yes** to set the disclaimer screen to appear prior to the login screen. Select **No** to set the disclaimer screen to show after the login screen.
- **Enforce 2-Factor Authentication:** Select **Yes** to require both a password and smart card to log in. Select **No** to allow users to log in using only a password or only a smart card.

**WARNING**

Enabling this setting without having your account set up with both a password and smart card will result in you being unable to log in or access the Settings Console. You will need to use the Administrator Backdoor method to log in or access Settings Console. See [Section 6.2: Administrator Backdoor, page 44](#).

- **Dead Man's Switch Code:** The Dead Man's Switch is only to be used in an emergency situation. For example, when user is threatened by an assailant with a gun and is pressured to login. Using the Dead Man's Switch will erase all crypto keys and make it impossible to unlock the disk. Data will be lost permanently.  
Check the **Enable box** to enable the switch. Type the code you wish to set as the Dead Man's Switch into the text box.  
To learn how to use the Dead Man's Switch, see [Section 6.1: Dead Man's Switch Operation, page 44](#).

**NOTE**

This setting is only visible to users with the Administrator or Security Officer role.

- **Recovery:** Check the **Enable box** to allow users with the Administrator or Security Officer roles to use the Export Configuration and Database Backup features. This field maps directly to the “-n noexport” installer option.

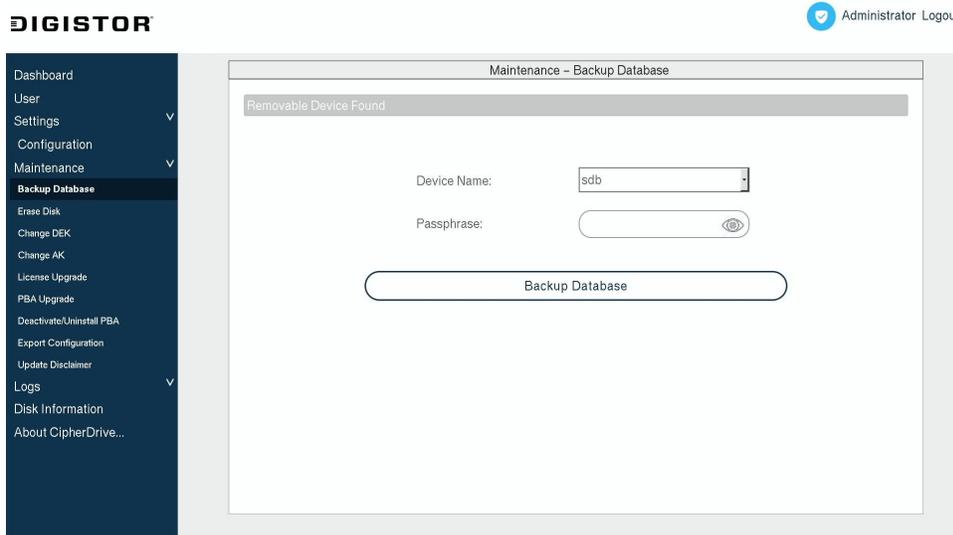
**NOTE**

This setting is only visible to users with the Security Officer role.

- **OS Chain-loader:** On certain systems, disks will lose power during the chain-booting process after login, resulting in the PBA being loaded repeatedly. On such systems, if this option is enabled, chain-loading will be used for handover from PBA to the protected OS.  
Check the **Chainboot type 1 box** to enable this setting.  
Once this option is enabled, the PBA will display the kernels available for chain-loading after you log in. Select the kernel and click **OK**.

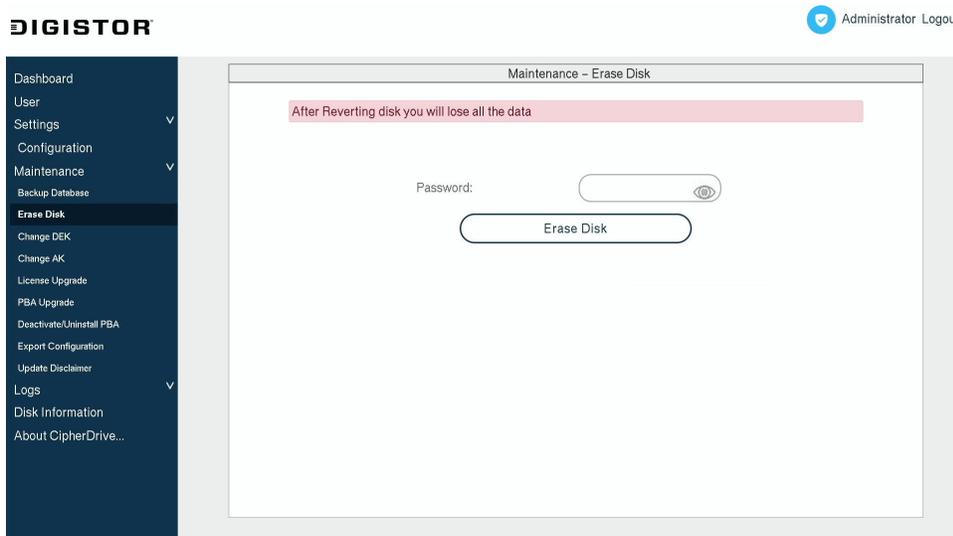
## 5.6. MAINTENANCE

## 5.6.1. BACKUP DATABASE



The "Backup Database" screen is used to export configuration and log data. This feature is planned to be fully implemented in a future version of the PBA software.

## 5.6.2. ERASE DISK

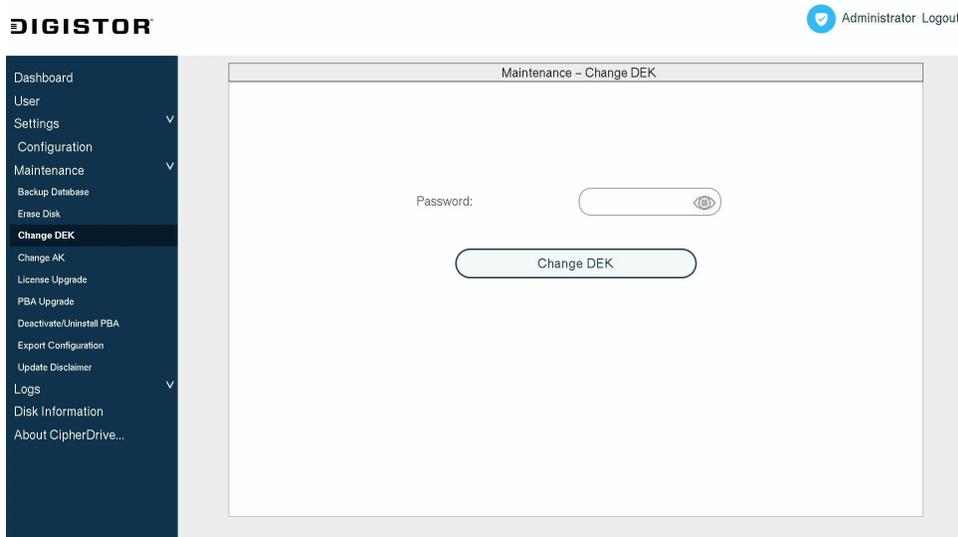


The "Erase Disk" screen lets a Security Officer erase everything on the SSD and resets it to the factory default state. This screen is only visible to users with the "Security Officer" role.

1. On the "Maintenance" > "Erase Disk" screen, enter your password into the **password field**.
2. Click the **Erase Disk button**.
3. A confirmation box will open asking if you really want to continue. Click **Yes** to continue.

The SSD will be erased.

### 5.6.3. CHANGE DEK



The "Change DEK" screen lets a Security Officer change the SSD's data encryption key (DEK). This is the actual key used to encrypt the data on the SSD. This screen is only visible to users with the "Security Officer" role.

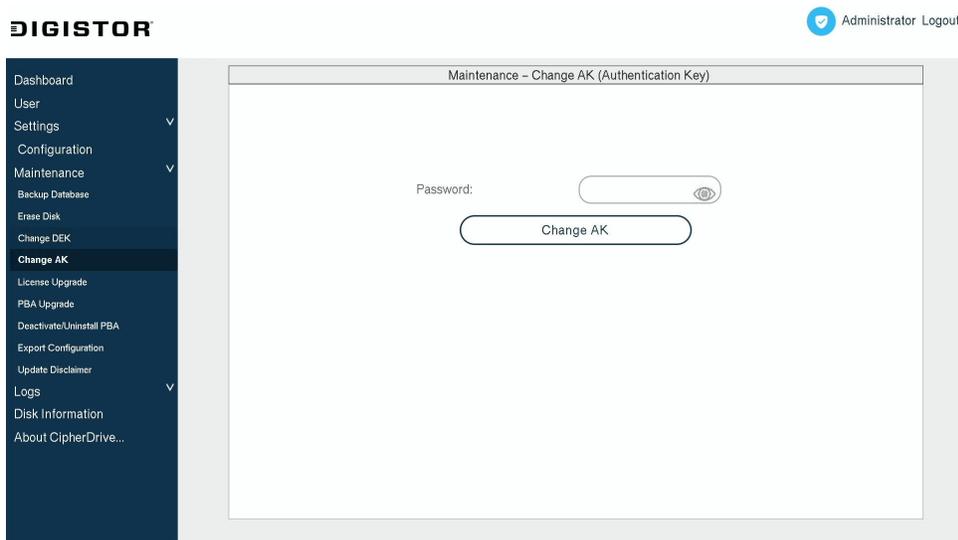


#### NOTE

This operation may also be called "SED Gen Key" or "Crypto-Erase" elsewhere.

1. On the "Maintenance" > "Change DEK" screen, enter your password into the **password field**.
2. Click the **Change DEK button**.
3. A window will pop up warning that the operation will cryptographically and irreversibly erase the SSD. Click **Yes** to change the DEK and erase the drive.

## 5.6.4. CHANGE AK



The "Change AK" screen lets an Administrator or Security Officer change the authentication keys (AK's) for all users. An AK ensures that a user is who they say they are. You should change the AK's if you suspect any AK to be compromised. This role is only visible to users with the Administrator or Security Officer roles.

1. On the "Maintenance" > "Change AK" screen, enter your password into the **password field**.
2. Click the **Change AK button**.
3. A window will pop up warning that the operation will change the AK's used to access the SSD and that the change is non-destructive and all of the content on the SSD will remain intact. Click **Yes** to change the AK.

## 5.6.5. LICENSE UPGRADE

Each Citadel SSD comes with a full license so generally you will not need to upgrade or change your license.

Licensing consists of two operations. First, you will need to generate a license request that is unique to the computer where the PBA will be used. This license string can be exported to a network folder for automatic processing by a licensing agent on the network or by manually giving the file to an administrator who will process the file and send back a file with an activation key.

Secondly, you'll have to import the key into the PBA to remove the 45 day trial period and enable the full suite of features available.

## GENERATE A LICENSE REQUEST

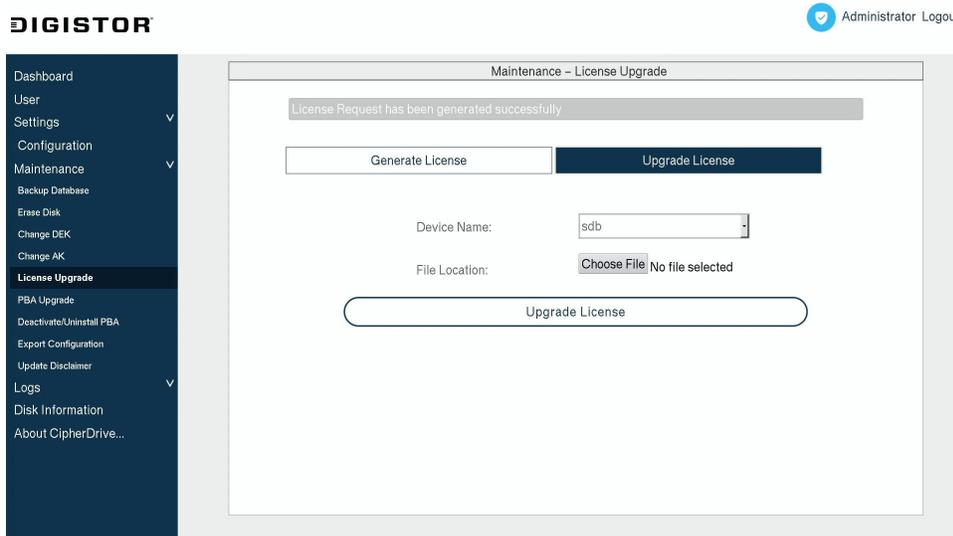
1. Insert a thumb drive formatted to FAT-32 into your computer.
2. On the "Maintenance" > "License Upgrade" screen, select the **Generate License tab**.
3. From the **Device Name drop-down box**, choose the thumb drive you inserted to the computer in Step 1. It may take a few seconds for the list of available devices to appear.
4. Enter your company name in the **Organisation Name field**.
5. If applicable, enter your company department or unit name into the **Unit field**.
6. Enter the number of licenses you need in the **No of licenses field**.
7. Click the **Generate License Request button** to create a license request file on the selected drive.
8. Send the license request file to Technical Support. See [Product Support](#).
9. When you receive the license from Technical Support, continue onto the Upgrade License section. See [CROSSREFERENCE].



### NOTE

The license Technical Support will send you also determines the data encryption key size used for the encryption/decryption of data. The default size is 256-bits. If you need a different size, please include the request when you contact Technical Support.

## UPGRADE LICENSE



1. Using a computer, place the license file you received from Technical Support onto a USB thumb drive formatted as FAT32.
2. Insert the thumb drive into the computer with the Citadel SSD installed in it.
3. On the "Maintenance" > "License Upgrade" screen, select the **Upgrade License tab**.
4. Select the thumb drive where the license file is stored from the **Device Name field**.
5. Click the **Choose File button** and find the license file. Select it and click **Open**.



### NOTE

Sometimes the "Open" dialog box will display the root of the computer system instead of the contents of the thumb drive. If this happens to you, you can find the thumb drive's contents in the 'mnt' folder.

6. Click the **Upgrade License button**.
7. A dialog box will pop up. Enter your password and click **Continue**.

The license will be updated. For changes to take effect, log out and log back in again.

### 5.6.6. UPGRADING THE PBA SOFTWARE

There are two methods to upgrade the Citadel SSD's PBA software: through the Settings Console or through a USB boot disk while using a command line utility.

#### VIA THE SETTINGS CONSOLE

1. Go to [cru.bz/citadel](http://cru.bz/citadel) and download the latest version of the Citadel PBA software.
2. Open the ZIP file you downloaded and extract the "COPY\_TO\_USB" folder to your computer.

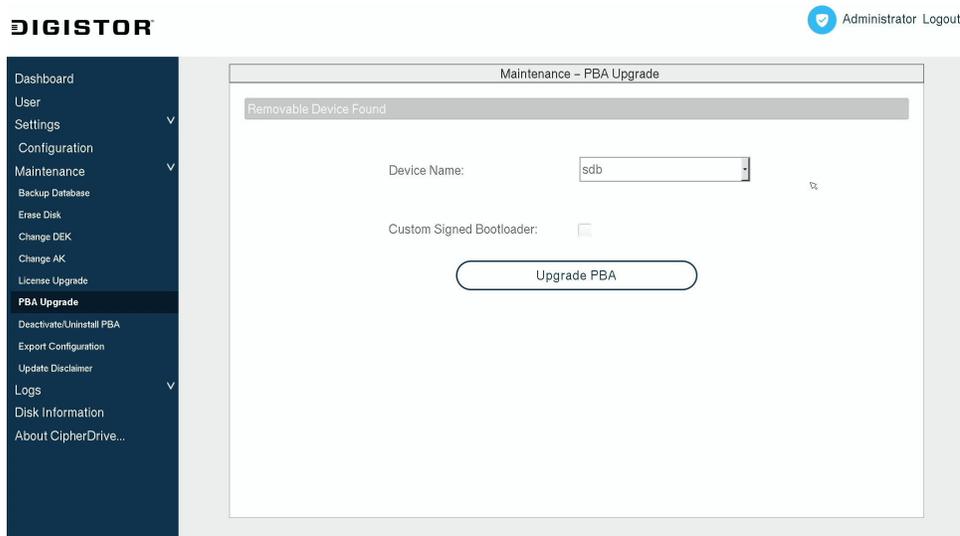
- Navigate into the "COPY\_TO\_USB" folder. Copy the contents of the "COPY\_TO\_USB" folder to a thumb drive.



### IMPORTANT

Do not copy the "COPY\_TO\_USB" folder itself over to the thumb drive. Your system may be unable to update the PBA software if you do.

- If there are any changes in customization information (your organization name, your IT support number, or disclaimer), then copy the license file you received from Technical Support to the root location of the thumb drive as well. Otherwise, continue onto the next step.
- Insert the thumb drive into the computer with the Citadel SSD you are upgrading.
- On the Settings Console, go to the **Maintenance > PBA Upgrade** screen.



- Choose the thumb drive that contains the PBA software from the **Device Name drop-down box**. It may take a few seconds for the list of available devices to appear.
- Check the **Custom Signed Bootloader checkbox** if you know you are using a custom signed bootloader. Otherwise, continue to the next step.
- Click the **Upgrade PBA button**.
- A dialog box will pop up. Enter an Administrator password and click **Continue**.

The Citadel SSD will now be upgraded. After the upgrade is complete, the computer will power off.

## VIA COMMAND LINE

### CREATE A BOOTABLE THUMB DRIVE

- Insert a USB thumb drive into your computer.
- Format a USB thumb drive to the FAT32 file system.

**CAUTION**

Be sure you backup any files on the drive because they will be erased!

**IMPORTANT**

Ensure that no other partitions or files exist on the thumb drive! If you have multiple partitions on the thumb drive, you may have to use other tools to delete them such as "Disk Management" which is built into Windows 8.1 and Windows 10.

3. Go to [cru.bz/citadel](http://cru.bz/citadel) and download the latest version of the Citadel PBA software.
4. Open the ZIP file you downloaded and extract the "COPY\_TO\_USB" folder to your computer.
5. Navigate into the "COPY\_TO\_USB" folder. Copy the contents of the "COPY\_TO\_USB" folder to the thumb drive.

**IMPORTANT**

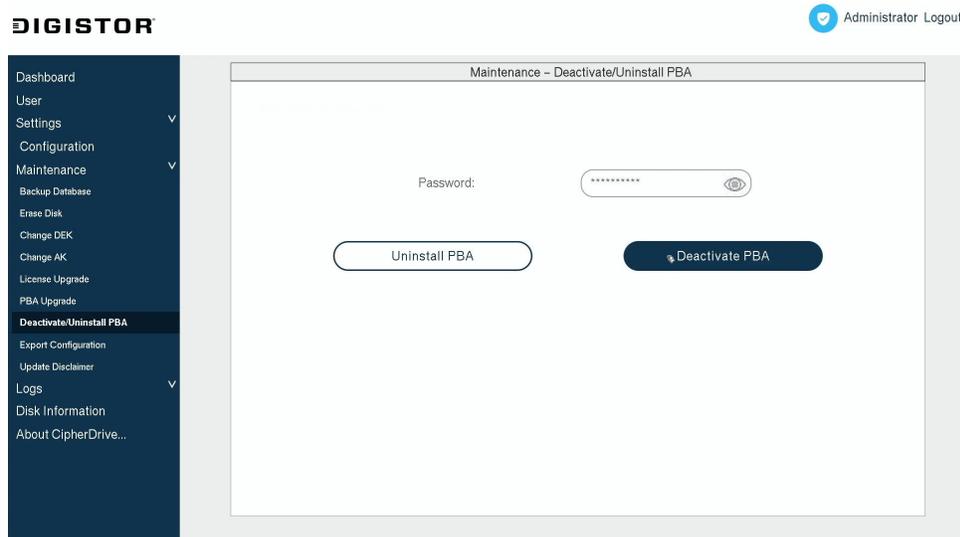
Do not copy the "COPY\_TO\_USB" folder itself over to the thumb drive. Your system may be unable to update the PBA software if you do.

6. If there are any changes in customization information (your organization name, your IT support number, or disclaimer), then copy the license file you received from Technical Support to the root location of the thumb drive as well. Otherwise, continue onto the next step.

**HOW TO BOOT INTO THE THUMB DRIVE**

1. Insert the bootable USB drive with the Citadel SSD software into the computer and turn it on.
2. Continually press the key for accessing your motherboard's boot menu while the computer starts up. This key to access it differs on different models, but the most common keys are **F2**, **F10**, **F12**, or **Esc**.
3. The motherboard's boot menu will appear. Choose the USB thumb drive from the list of boot options.
4. A Linux BASH prompt will load. Press **Enter** to activate the console.

## 5.6.7. TEMPORARILY DEACTIVATE THE PBA



The Citadel SSD PBA software can be temporarily disabled by an authorized administrator to allow maintenance of the computer's OS. This may be necessary for OS updates that require multiple reboots, or when you need uninterrupted booting and reading from a USB thumb drive or CD. Once work on the host OS is completed, you can reactivate the Citadel SSD PBA software.



### NOTE

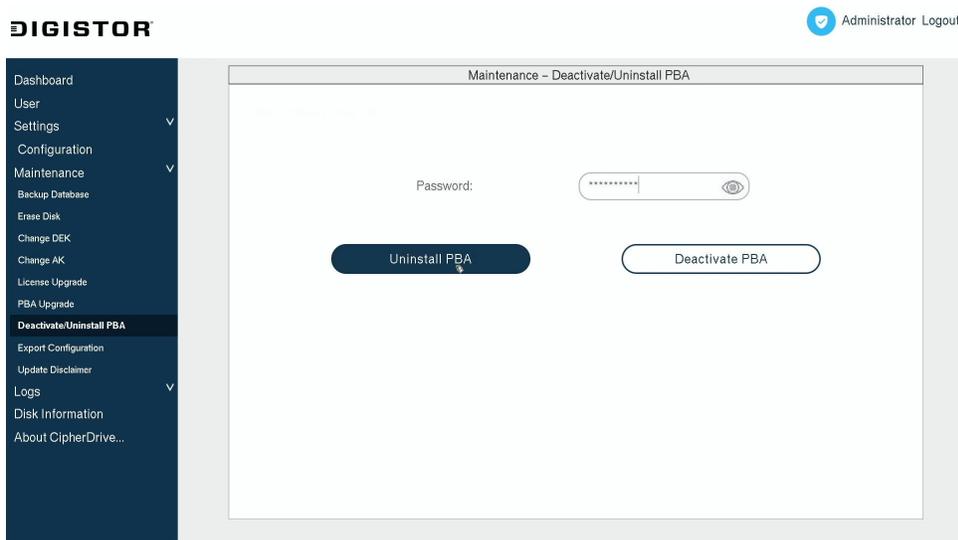
This operation does not destroy any data, user profiles, or settings. It is only visible to users with the Security Officer or Administrator roles.

1. On the "Maintenance" > "Deactivate/Uninstall PBA" screen, enter your Administrator password into the **password field**.
2. Click the **Deactivate PBA button**.
3. A confirmation dialog box will pop up asking if you're sure you want to continue. Click **Yes** to deactivate.

The Citadel SSD PBA software has now been deactivated.

When you need to reactivate the Citadel SSD, see [Section 3: Activate the Citadel SSD, page 8](#) and follow the instructions.

## 5.6.8. UNINSTALL THE PBA SOFTWARE



You can completely uninstall the Citadel SSD PBA software, which will completely remove all settings, users, and files from the SSD.



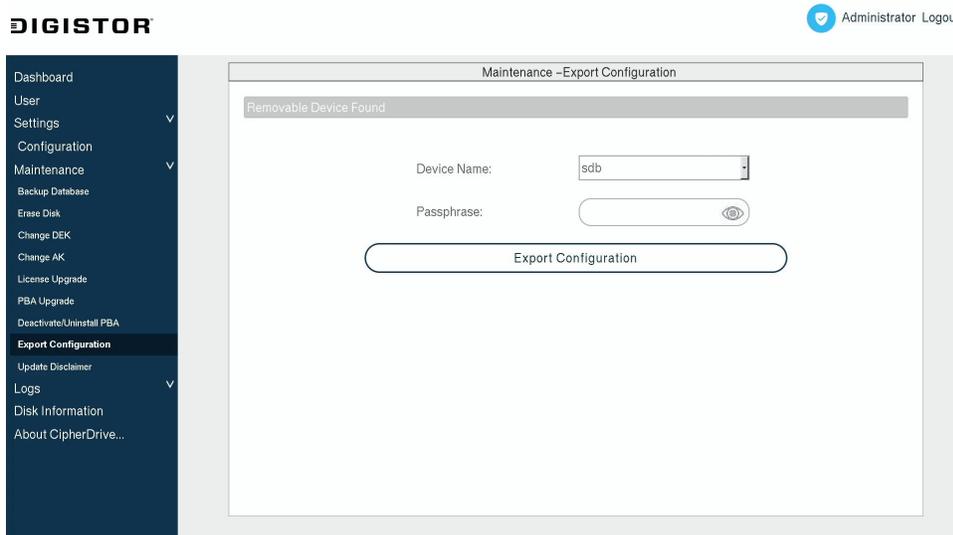
### WARNING

DIGISTOR recommends against performing this action unless a Technical Support agent directs you to do so.

1. On the "Maintenance" > "Deactivate/Uninstall PBA" screen, enter your Administrator password into the **password field**.
2. Click the **Uninstall PBA button**.
3. A confirmation dialog box will pop up asking if you're sure you want to continue. Click **Yes** to uninstall.

The Citadel SSD PBA software will now be uninstalled.

## 5.6.9. EXPORT CONFIGURATION



The "Export Configuration" feature is used to deploy a large number of devices with the same configuration on all of them. The configuration includes both users and settings and will be named "CDExportDB".

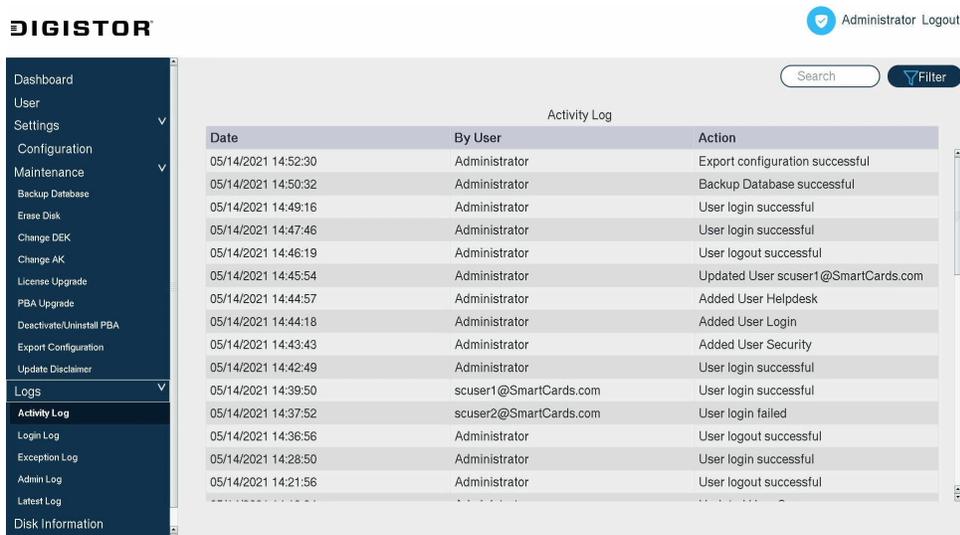
This screen is only visible to users with Administrator or Security Officer roles.

1. Insert a thumb drive formatted to FAT-32 into your computer.
2. On the "Maintenance" > "Export Configuration" screen, choose the device or drive to store the configuration file on from the **Device Name drop-down box**. It may take a few seconds for the list of available devices to appear.
3. Type in a passphrase that will be used to encrypt the configuration file into the **Passphrase text box**.
4. Click the **Export Configuration button**.
5. A dialog box will pop up. Enter your password and click **Continue** to confirm your credentials.

The "CDExportDB" configuration file has now been exported to the root of the thumb drive.

## 5.7. LOGS

### 5.7.1. ACTIVITY LOG



Date	By User	Action
05/14/2021 14:52:30	Administrator	Export configuration successful
05/14/2021 14:50:32	Administrator	Backup Database successful
05/14/2021 14:49:16	Administrator	User login successful
05/14/2021 14:47:46	Administrator	User login successful
05/14/2021 14:46:19	Administrator	User logout successful
05/14/2021 14:45:54	Administrator	Updated User scuser1@SmartCards.com
05/14/2021 14:44:57	Administrator	Added User Helpdesk
05/14/2021 14:44:18	Administrator	Added User Login
05/14/2021 14:43:43	Administrator	Added User Security
05/14/2021 14:42:49	Administrator	User login successful
05/14/2021 14:39:50	scuser1@SmartCards.com	User login successful
05/14/2021 14:37:52	scuser2@SmartCards.com	User login failed
05/14/2021 14:36:56	Administrator	User logout successful
05/14/2021 14:28:50	Administrator	User login successful
05/14/2021 14:21:56	Administrator	User logout successful

The "Activity Log" screen includes every log that exists in the Citadel SSD PBA software's database. To access the "Activity Log" screen, click on **Logs** on the left-hand menu and then click on **Activity Log**.

You can search for specific log messages by using the **Search text box** in the top right of the screen and you can filter log messages by date range and username by clicking on the **Filter button** in the top right. See [Section 5.7.7: Log Filter, page 42](#).

Here are the types of logs available from this screen:

#### Login Messages

- User login successful
- User login failed
- User logoff successful



#### NOTE

This log message means that the user has exited the PBA Settings Console and booted into the host system. This log message is not recorded unless the user has already first entered the Settings Console.

#### User Management Messages

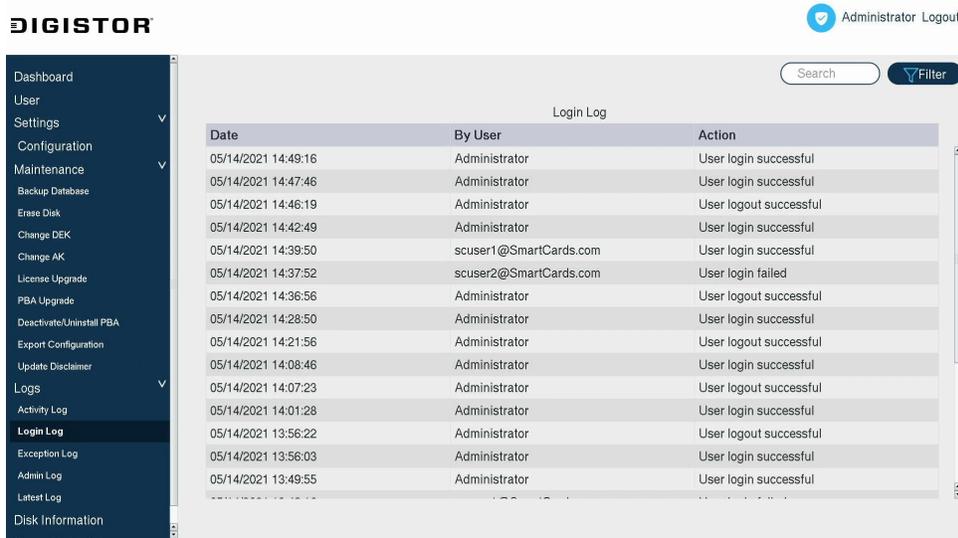
- Added user
- Edited user
- Failed to add user
- Failed to delete user

- Failed to edit user
- User deleted

### Maintenance Messages

- Incorrect JSON data for import users

## 5.7.2. LOGIN LOG



Date	By User	Action
05/14/2021 14:49:16	Administrator	User login successful
05/14/2021 14:47:46	Administrator	User login successful
05/14/2021 14:46:19	Administrator	User logout successful
05/14/2021 14:42:49	Administrator	User login successful
05/14/2021 14:39:50	scuser1@SmartCards.com	User login successful
05/14/2021 14:37:52	scuser2@SmartCards.com	User login failed
05/14/2021 14:36:56	Administrator	User logout successful
05/14/2021 14:28:50	Administrator	User login successful
05/14/2021 14:21:56	Administrator	User logout successful
05/14/2021 14:08:46	Administrator	User login successful
05/14/2021 14:07:23	Administrator	User logout successful
05/14/2021 14:01:28	Administrator	User login successful
05/14/2021 13:56:22	Administrator	User logout successful
05/14/2021 13:56:03	Administrator	User login successful
05/14/2021 13:49:55	Administrator	User login successful

The "Login Log" screen includes successful and unsuccessful login and logout events of the Citadel SSD. To access the "Login Log" screen, click on **Logs** on the left-hand menu and then click on **Login Log**.

You can search for specific log messages by using the **Search text box** in the top right of the screen and you can filter log messages by date range and username by clicking on the **Filter button** in the top right. See [Section 5.7.7: Log Filter, page 42](#).

Here are the types of logs available from this screen:

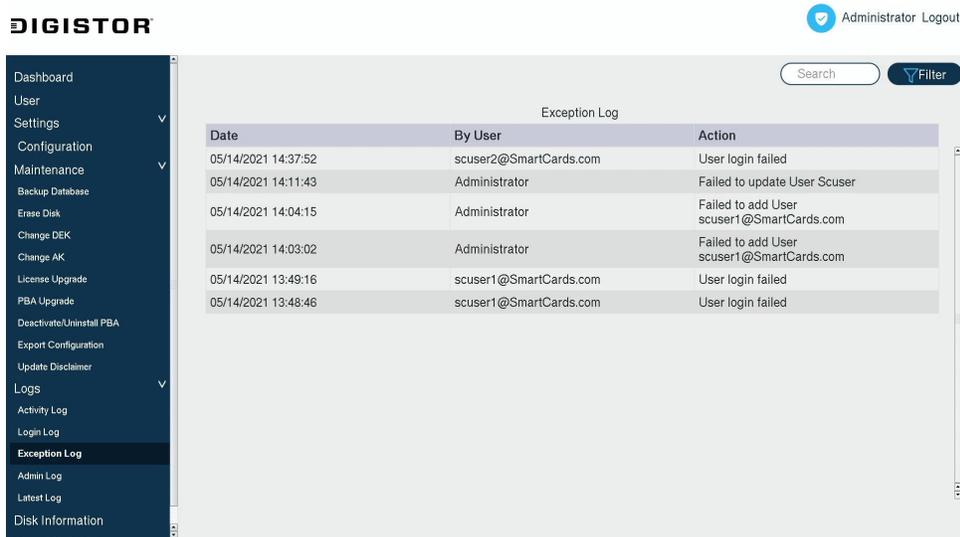
- User login successful
- User login failed
- User logoff successful



### NOTE

This log message means that the user has exited the PBA Settings Console and booted into the host system. This log message is not recorded unless the user has already first entered the Settings Console.

### 5.7.3. EXCEPTION LOG



The screenshot shows the DIGISTOR web interface. The top right corner displays 'Administrator Logout'. The left sidebar menu includes categories like Dashboard, User, Settings, Configuration, Maintenance, Erase Disk, Change DEK, Change AK, License Upgrade, PBA Upgrade, Deactivate/Uninstall PBA, Export Configuration, Update Disclaimer, Logs, Activity Log, Login Log, Exception Log (highlighted), Admin Log, Latest Log, and Disk Information. The main content area is titled 'Exception Log' and features a table with the following data:

Date	By User	Action
05/14/2021 14:37:52	scuser2@SmartCards.com	User login failed
05/14/2021 14:11:43	Administrator	Failed to update User Scuser
05/14/2021 14:04:15	Administrator	Failed to add User scuser1@SmartCards.com
05/14/2021 14:03:02	Administrator	Failed to add User scuser1@SmartCards.com
05/14/2021 13:49:16	scuser1@SmartCards.com	User login failed
05/14/2021 13:48:46	scuser1@SmartCards.com	User login failed

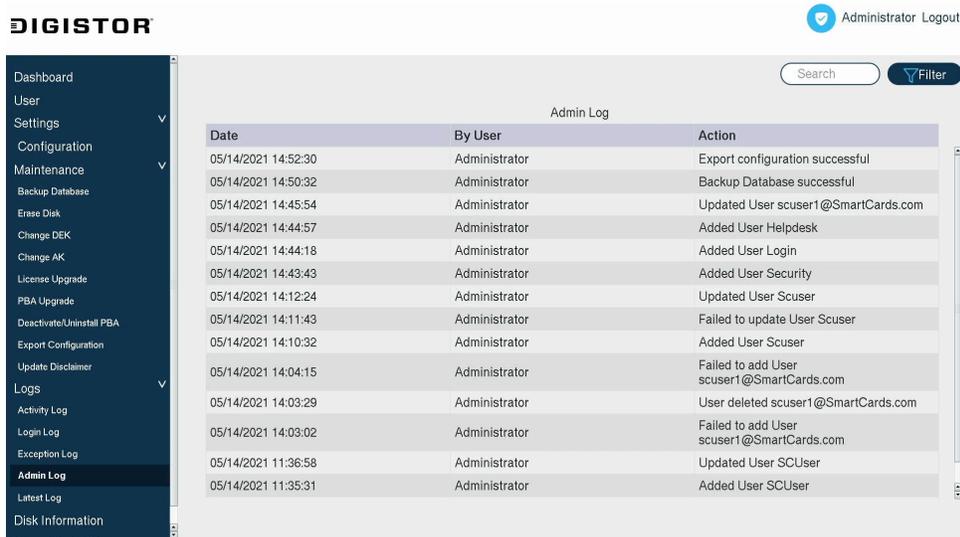
The "Exception Log" screen includes all failed actions. To access the "Exception Log" screen, click on **Logs** on the left-hand menu and then click on **Exception Log**.

You can search for specific log messages by using the **Search text box** in the top right of the screen and you can filter log messages by date range and username by clicking on the **Filter button** in the top right. See [Section 5.7.7: Log Filter, page 42](#).

Here are the types of logs available from this screen:

- Failed to add user
- Failed to delete user
- Failed to edit user
- Incorrect JSON data for import users
- User login failed

## 5.7.4. ADMIN LOG



The screenshot shows the DIGISTOR Admin Log interface. The sidebar menu on the left includes options like Dashboard, User, Settings, Configuration, Maintenance, Backup Database, Erase Disk, Change DEK, Change AK, License Upgrade, PBA Upgrade, Deactivate/Uninstall PBA, Export Configuration, Update Disclaimer, Logs, Activity Log, Login Log, Exception Log, Admin Log (selected), Latest Log, and Disk Information. The main content area displays a table titled 'Admin Log' with the following data:

Date	By User	Action
05/14/2021 14:52:30	Administrator	Export configuration successful
05/14/2021 14:50:32	Administrator	Backup Database successful
05/14/2021 14:45:54	Administrator	Updated User scuser1@SmartCards.com
05/14/2021 14:44:57	Administrator	Added User Helpdesk
05/14/2021 14:44:18	Administrator	Added User Login
05/14/2021 14:43:43	Administrator	Added User Security
05/14/2021 14:12:24	Administrator	Updated User Scuser
05/14/2021 14:11:43	Administrator	Failed to update User Scuser
05/14/2021 14:10:32	Administrator	Added User Scuser
05/14/2021 14:04:15	Administrator	Failed to add User scuser1@SmartCards.com
05/14/2021 14:03:29	Administrator	User deleted scuser1@SmartCards.com
05/14/2021 14:03:02	Administrator	Failed to add User scuser1@SmartCards.com
05/14/2021 11:36:58	Administrator	Updated User SCUUser
05/14/2021 11:35:31	Administrator	Added User SCUUser

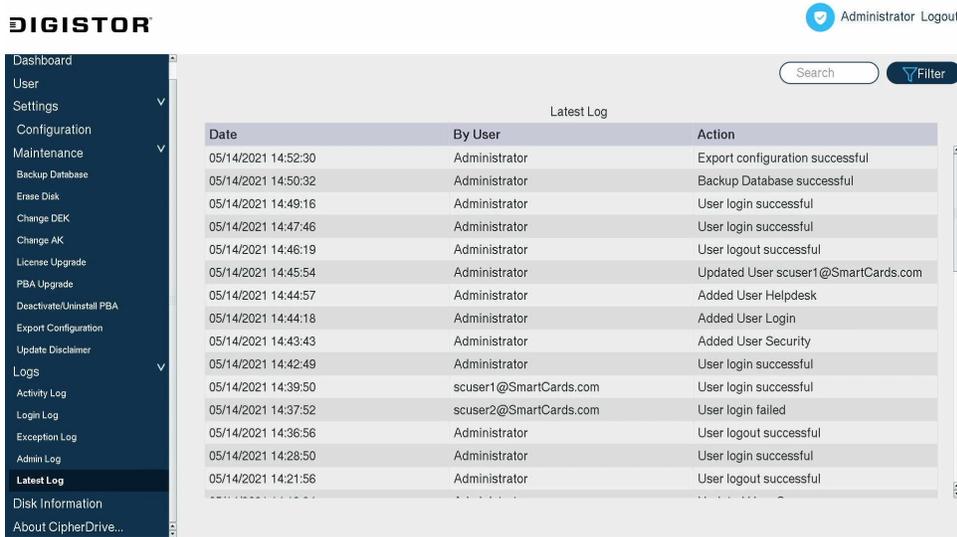
The "Admin Log" screen includes all administrator actions carried out by the administrator on their account. To access the "Admin Log" screen, click on **Logs** on the left-hand menu and then click on **Admin Log**.

You can search for specific log messages by using the **Search text box** in the top right of the screen and you can filter log messages by date range and username by clicking on the **Filter button** in the top right. See [Section 5.7.7: Log Filter, page 42](#).

Here are the types of logs available from this screen:

- Added user
- Edited user
- User deleted

## 5.7.5. LATEST LOG



Date	By User	Action
05/14/2021 14:52:30	Administrator	Export configuration successful
05/14/2021 14:50:32	Administrator	Backup Database successful
05/14/2021 14:49:16	Administrator	User login successful
05/14/2021 14:47:46	Administrator	User login successful
05/14/2021 14:46:19	Administrator	User logout successful
05/14/2021 14:45:54	Administrator	Updated User scuser1@SmartCards.com
05/14/2021 14:44:57	Administrator	Added User Helpdesk
05/14/2021 14:44:18	Administrator	Added User Login
05/14/2021 14:43:43	Administrator	Added User Security
05/14/2021 14:42:49	Administrator	User login successful
05/14/2021 14:39:50	scuser1@SmartCards.com	User login successful
05/14/2021 14:37:52	scuser2@SmartCards.com	User login failed
05/14/2021 14:36:56	Administrator	User logout successful
05/14/2021 14:28:50	Administrator	User login successful
05/14/2021 14:21:56	Administrator	User logout successful

The "Latest Log" screen includes all logs generated for the current day. To access the "Admin Log" screen, click on **Logs** on the left-hand menu and then click on **Latest Log**.

You can search for specific log messages by using the **Search text box** in the top right of the screen and you can filter log messages by date range and username by clicking on the **Filter button** in the top right. See [Section 5.7.7: Log Filter, page 42](#).

Here are the types of logs available from this screen:

### Login Messages

- User login successful
- User login failed
- User logoff successful



### NOTE

This log message means that the user has exited the PBA Settings Console and booted into the host system. This log message is not recorded unless the user has already first entered the Settings Console.

### User Management Messages

- Added user
- Edited user
- Failed to add user
- Failed to delete user
- Failed to edit user
- User deleted

## Maintenance Messages

- Incorrect JSON data for import users

## 5.7.6. PURGE LOG

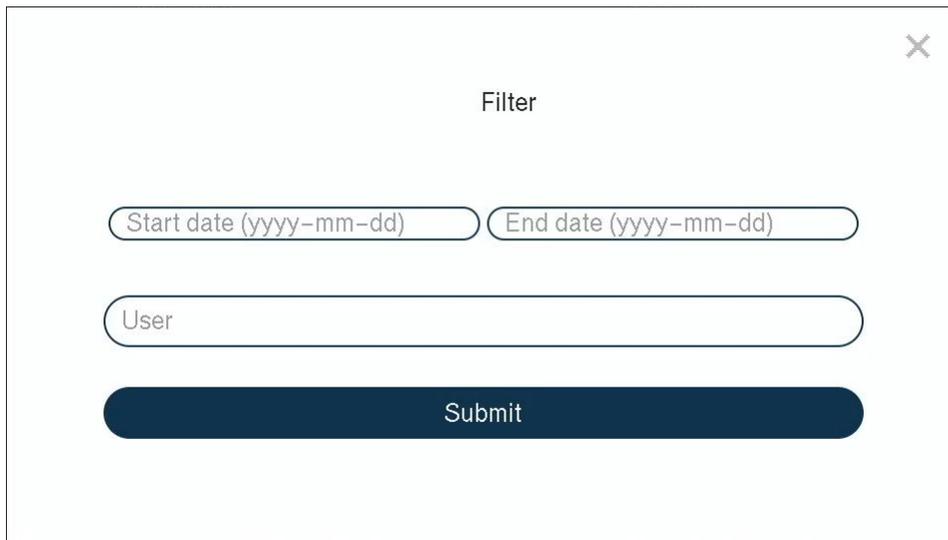
The screenshot shows the DIGISTOR web interface. On the left is a dark blue sidebar menu with the following items: Dashboard, User, Settings (with a dropdown arrow), Configuration, Maintenance (with a dropdown arrow), Backup Database, Erase Disk, Change DEK, Change AK, Deactivate/Uninstall PBA, Export Configuration, Update Disclaimer, Logs (with a dropdown arrow), Activity Log, Login Log, Exception Log, Admin Log, Latest Log, Purge Log (highlighted in white), Disk Information, and About CipherDrive... The main content area is titled 'Purge Log' and contains a form with the following elements: a message 'Both dates input are mandatory.', two date input fields labeled 'Start date (yyyy-mm-dd)' and 'End date (yyyy-mm-dd)', a 'User Name:' label with an input field containing 'User', and a 'Purge Logs' button. A 'Security Logout' link is visible in the top right corner.

The "Purge Log" screen allows Security Officer users to delete logs by date range and/or username.

1. Click on the **Start Date text box**. You'll be shown a pop-up calendar. Click on your desired start date for the date range you want to search within.
2. Click on the **End Date text box** and choose your desired end date from the pop-up calendar.
3. If desired, type in the user account name whose logs you want to purge.
4. Click the **Purge Logs button**.
5. A confirmation box will pop up asking if you are sure you want to continue. Click **Yes**.

The logs within the selected date range and belonging to the chosen user account have now been deleted.

### 5.7.7. LOG FILTER



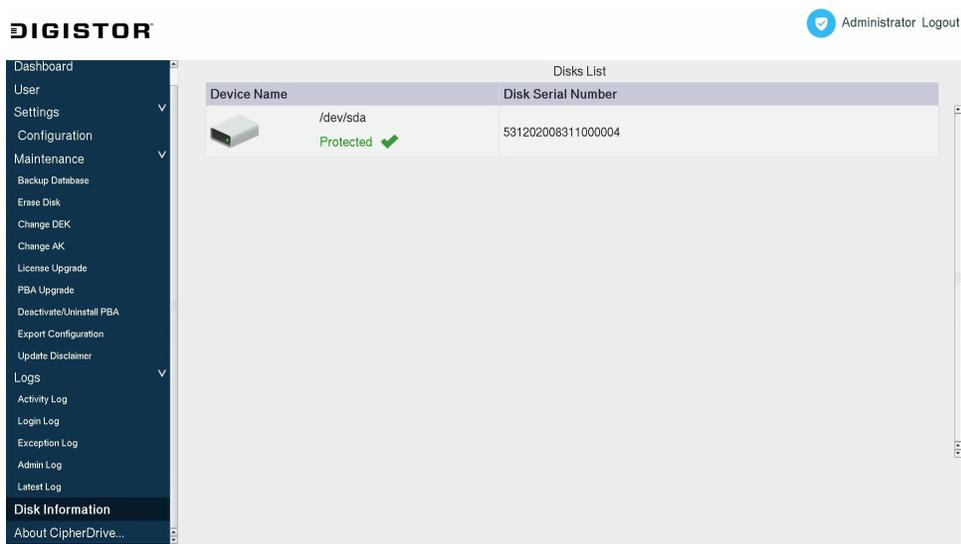
The screenshot shows a dialog box titled "Filter" with a close button (X) in the top right corner. Inside the dialog, there are three input fields: "Start date (yyyy-mm-dd)", "End date (yyyy-mm-dd)", and "User". Below these fields is a dark blue "Submit" button.

You can sort and filter the display of logs by date and/or username with the log filter. This feature is available on all log screens except the "Purge Log" screen.

1. Click on the **Filter button** in the top right.
2. Click on the **Start Date text box**. You'll be shown a pop-up calendar. Click on your desired start date for the date range you want to search within.
3. Click on the **End Date text box** and choose your desired end date from the pop-up calendar.
4. If desired, type in the user account name whose logs you want to display.
5. Click the **Submit button**.

A list of logs matching the criteria you entered will appear.

## 5.8. DISK INFORMATION



The screenshot shows the DIGISTOR web interface. The top left corner features the DIGISTOR logo. The top right corner has a blue shield icon and the text "Administrator Logout". A dark blue sidebar on the left contains a navigation menu with the following items: Dashboard, User, Settings (with a dropdown arrow), Configuration, Maintenance (with a dropdown arrow), Backup Database, Erase Disk, Change DEK, Change AK, License Upgrade, PBA Upgrade, Deactivate/Uninstall PBA, Export Configuration, Update Disclaimer, Logs (with a dropdown arrow), Activity Log, Login Log, Exception Log, Admin Log, Latest Log, Disk Information (highlighted in white), and About CipherDrive... The main content area is titled "Disks List" and contains a table with two columns: "Device Name" and "Disk Serial Number". The table has one row with a disk icon, the device name "/dev/sda", a green checkmark and the word "Protected", and the serial number "531202008311000004".

Device Name	Disk Serial Number
 /dev/sda Protected 	531202008311000004

The "Disk Information" screen shows a list of available disks installed on the computer and displays each one's device name, serial number, and protection status.

## 6. OTHER FEATURES

### 6.1. DEAD MAN'S SWITCH OPERATION

The Dead Man's Switch is used when a threatened user wants to destroy the disk authentication keys making the disk content impossible to recover. For example, when user is threatened by a man with a gun and is pressured to login.

1. Enter the login user's username and password at the login screen.
2. In the password field, after entering the user's password, **don't press enter/logon!** Instead, continue by entering the Dead Man's Switch code directly following the user's password characters.
3. Now click the Logon button.

The PBA will destroy all the authentication keys without acknowledgment of any sort. This will make it impossible to access the protected drive.

#### 6.1.1. RESETTING AN SSD AFTER USING THE DEAD MAN'S SWITCH

There is a special utility in the installer which, together with entering the factory reset code printed on the label of the physical disk, will cryptographically erase the disk and revert the disk back to factory settings so it can be reused. The data will remain permanently lost because the hardware encryption key used to encrypt/decrypt sectors on the disk will have been changed.

There is no way to recover data from this operation but the disk itself can be used again.

### 6.2. ADMINISTRATOR BACKDOOR

The Administrator Backdoor is intended to allow you to log in if you accidentally enable two-factor authentication without also having a user account set up for two-factor authentication.



#### DANGER

Because the Administrator account can be accessed in this way, DIGISTOR recommends that you do not use this account for everyday access or share its credentials with anyone. You should also use a proper, secure password and store it in a secure location. The security of your data depends on it!

To log in with the Administrator backdoor, follow these instructions:

1. On the "Login" screen, type the username **Administrator** into the **Username field**.
2. Type the Administrator account's password into **Password field**.
3. Check the **Settings Console checkbox**.
4. Click the **Next button**. The Smart Card login screen will now appear.

5. Skip selecting a username or entering your PIN. Instead, click the **Login button**.

You will now be logged into the Settings Console on the Administrator account. Now you can disable two-factor authentication if necessary by going to Settings > Configuration. See [Section 5.5.1: Configuration, page 24](#).

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