

Secure Cross Platform Authentication Of USB Self Encrypting Drives

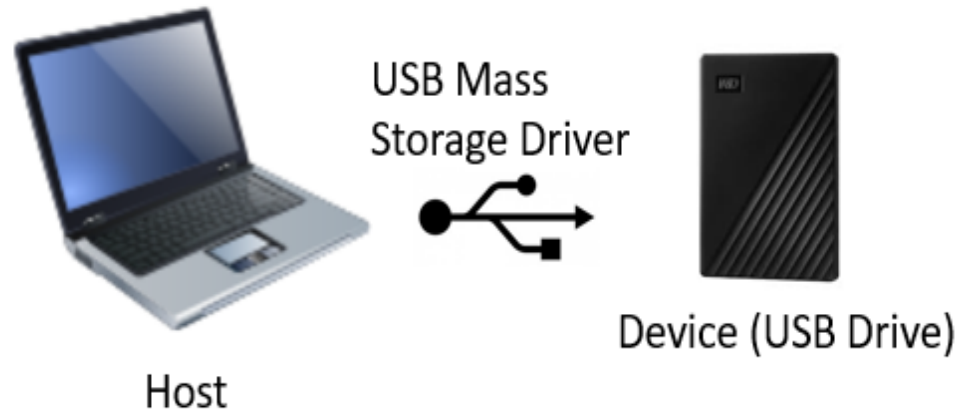
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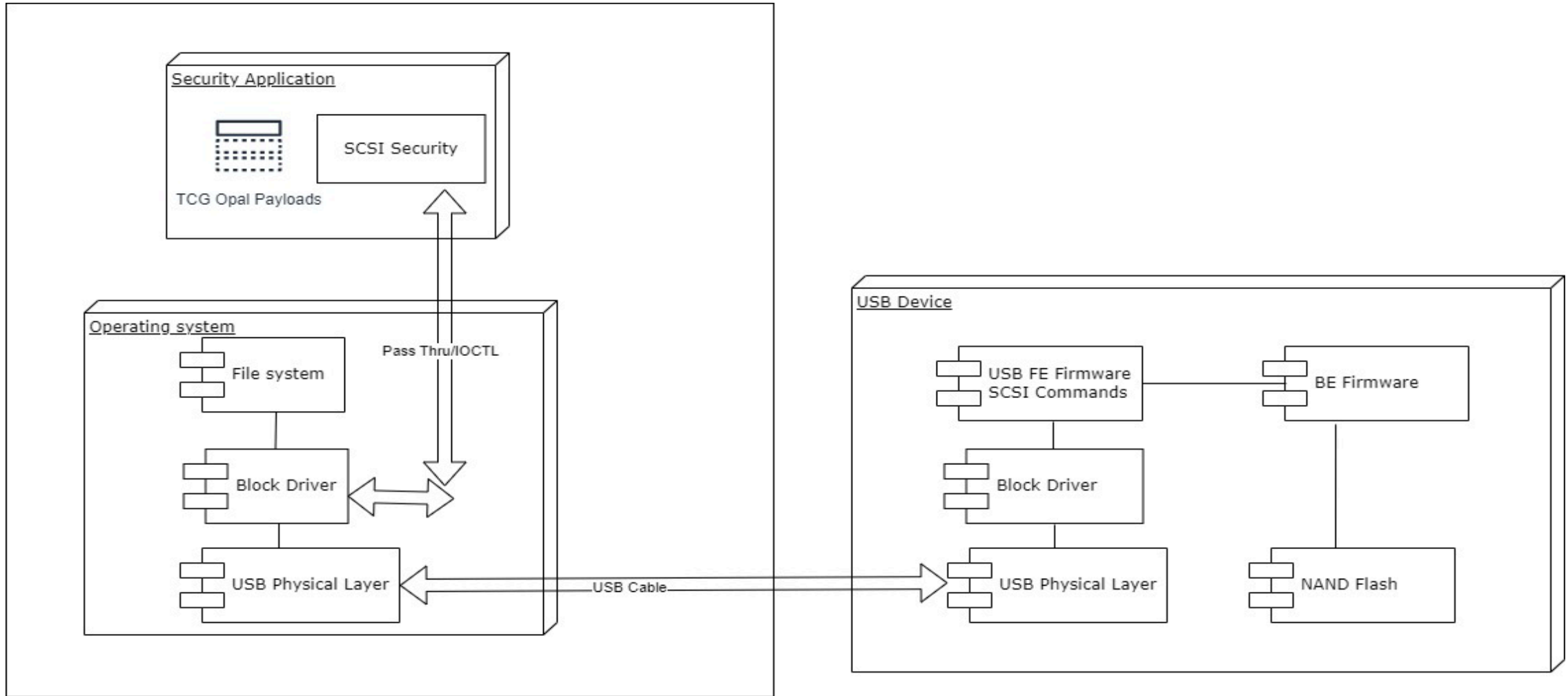


Introduction

- The TCG Opal Suite defines security protocols for SED (self-encrypting drives), including setting passwords and locking/unlocking, which require platform-specific APIs on Windows, macOS, or Linux.
- User needs to install different application software for each operating system, complicating USB drive management.
- Platform-dependent applications use mass storage drivers, limiting cross-platform compatibility.

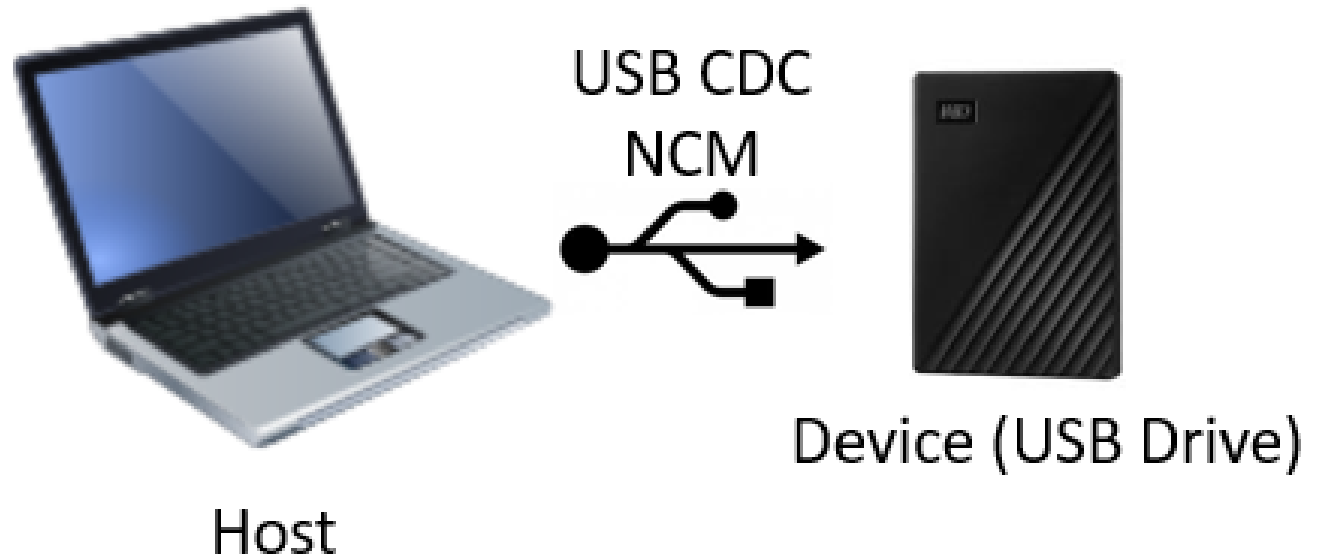


SCSI Based Security Flow

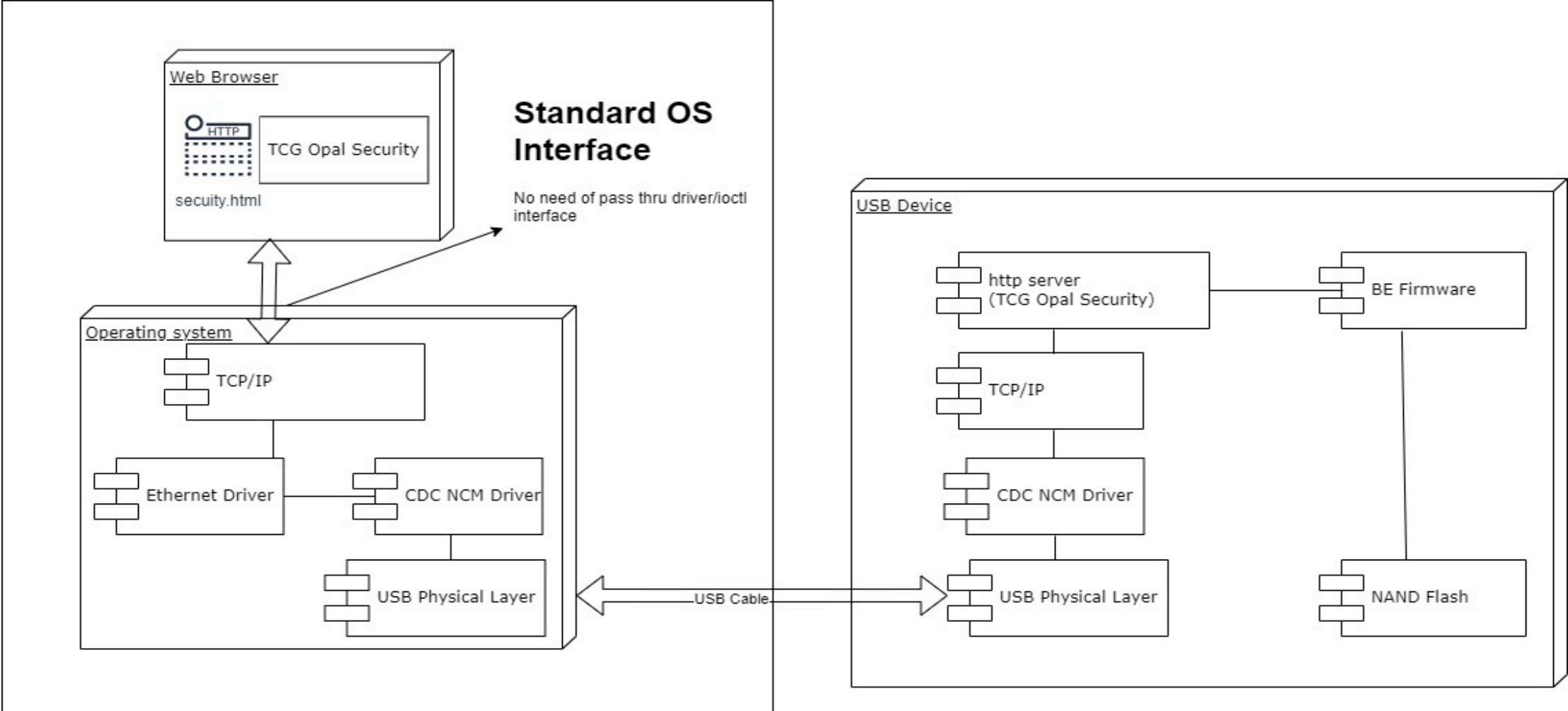


Our solution: CDC NCM Driver (IP Over USB)

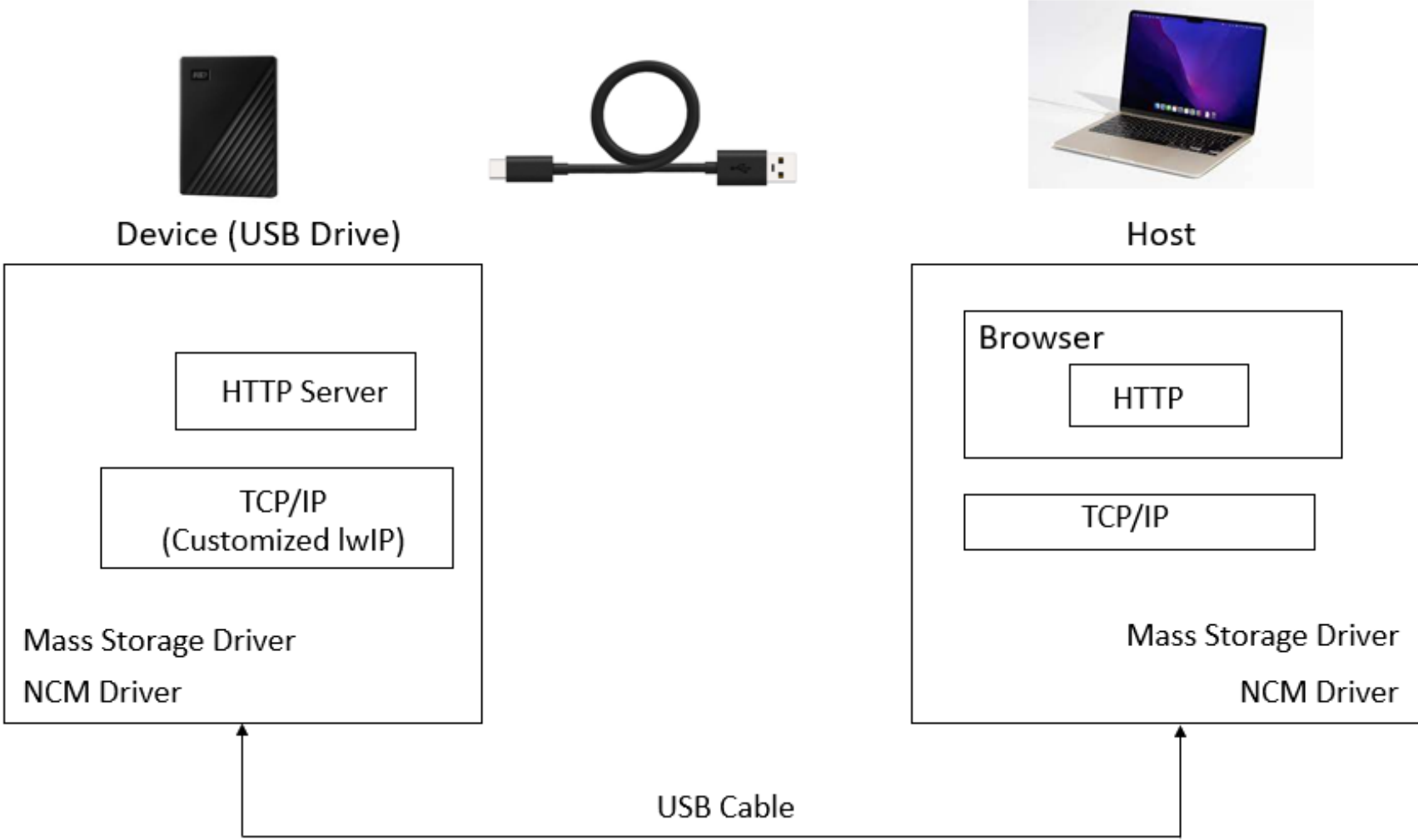
- Platform-independent method for USB drive management using the CDC NCM Driver to send security commands over HTTP.
- Users can manage their drives and set passwords via a web page
- Eliminates the need for platform-specific software.



HTTP Based Security Flow



Web-Based Locking and Unlocking of USB Drives



Connect the Drive to the laptop using USB Cable



USBNcm Host Device

The screenshot shows the Windows Network Connections window. The title bar reads "Network Connections". The address bar shows the path: "Control Panel > Network and Internet > Network Connections". A search box on the right contains the text "Search Network Connections". Below the address bar is an "Organize" menu. The main content area displays four network categories: Bluetooth Network Connection (Not connected), Ethernet (Network cable unplugged), Wi-Fi (Voyager), and RPi (Unidentified network). The RPi category is highlighted with a blue box and contains a sub-entry "UsbNcm Host Device #6".




Click on the Security HTML Page

The screenshot shows a Windows File Explorer window titled "USB Drive (D:)" with the address bar set to "This PC > USB Drive (D:)". The left sidebar shows navigation options like Home, Gallery, and Rashi - Western Digital. The main pane displays a table of files:

Name	Date modified	Type	Size
Security	2/14/2024 4:46 PM	Chrome HTML Docu...	16 KB
wdLogo	2/14/2024 4:46 PM	PNG File	11 KB



Web Application - Set Password



Western Digital Security

Set Password for WD Drive


Enter New Password:

Confirm Password:

Submit

This page says
Password set successfully!

OK



Western Digital Security

Set Password for WD Drive


Enter New Password:

Confirm Password:

Submit



Web Application - Lock the Drive




Western Digital Security

Lock Drive

Lock Drive

Drive locked successfully!

OK




Western Digital Security

Lock Drive

Lock Drive



Web Application - Unlock the Drive




Western Digital Security

Unlock Drive

Enter Your Password:

Drive unlocked successfully!




Western Digital Security

Unlock Drive

Enter Your Password:



Web Application – Reset Password



Western Digital Security


Reset Password

Old Password:

New Password:

Confirm New Password:

Password reset successfully!



Western Digital Security

Reset Password


Old Password:

New Password:

Confirm New Password:




Web Application - Remove Password



Western Digital Security
Remove Password

Enter Password:

Password removed successfully!



Western Digital Security
Remove Password

Enter Password:



Advantages

Cross-
Platform
Compatibility

Reduced
Complexity

Cost-Effective

No Software
Installation



Thank You

