Windows 10 IoT Enterprise 2016 LTSB Overview, Setup & Configuration

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AVNET SILICA

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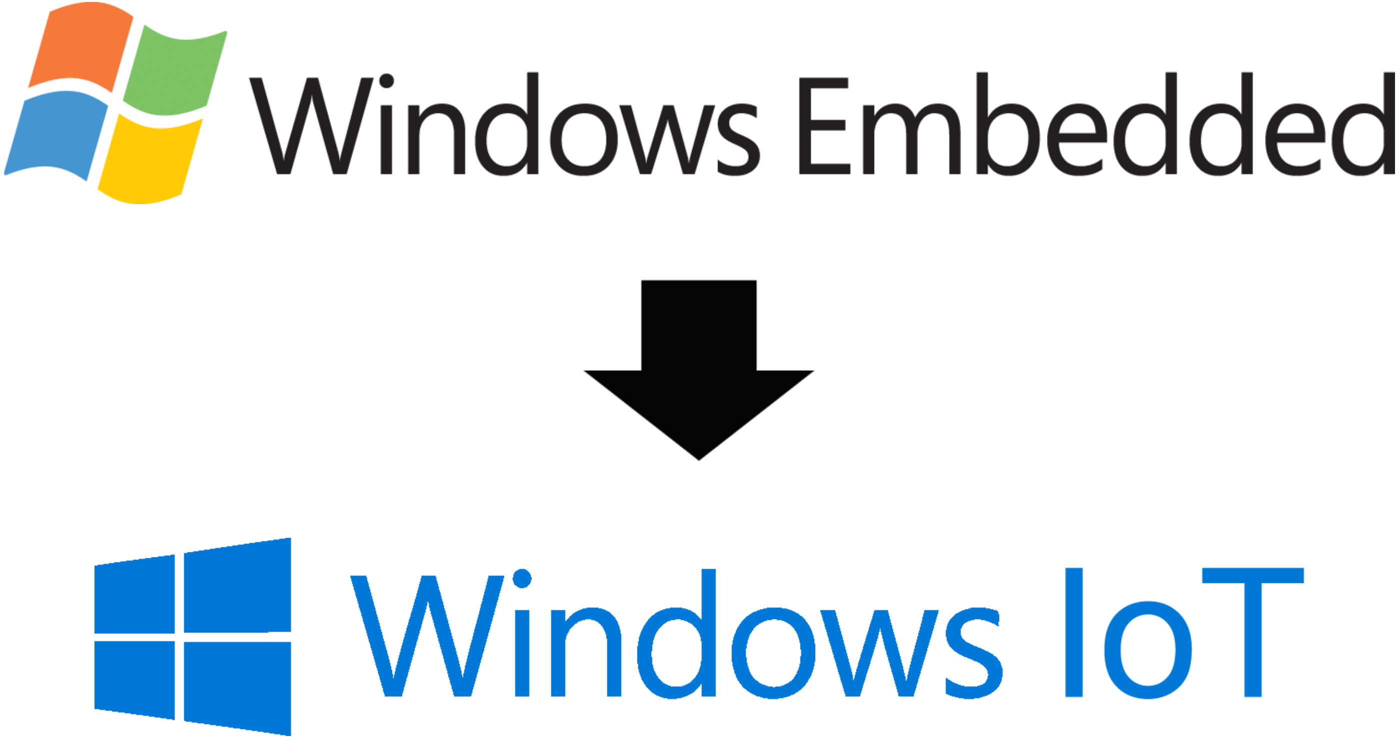
Windows 10 IoT Enterprise 2016 Channel / Licensing Description:

- CLA
- Professional / Enterprise
- CB / CBB / LTSB
- PKEA / ePKEA
- OPK

Microsoft Industrial Channel Rebranding



Windows Embedded

Windows IoT

Microsoft Industrial Channel

Windows

Windows IoT

Microsoft Windows Embedded: Embedded OEM CLA

CLA: „CUSTOMER LICENSE AGREEMENT“ → MICROSOFT EMBEDDED OEM CONTRACT

- Agreement between OEM and Microsoft to get access to Embedded/IoT licenses (COAs)
- Agreement with electronic signature
- Territorial dependence: EMEA, US/Latam, Japan, China, Hong Kong, Taiwan
- Cost free
- No quantity commitment, OEM doesn‘t need to buy any licenses
- OEM has to bundle HW with OS including COA and Application → Industrial solution
- OEM is required to support their solution
- OEM has worldwide export rights
- OEM is allowed to produce recovery / update and upgrade media for end customers
- OEM can define „Outsource Manufacturers“. An OM can purchase and install OEM licenses in the name of the OEM.
- OEM can define „3rd Party Integrators“. A TPI can build the OS image in the name of the OEM

Definition of CB / CBB / LTSB

CB: CURRENT BRANCH

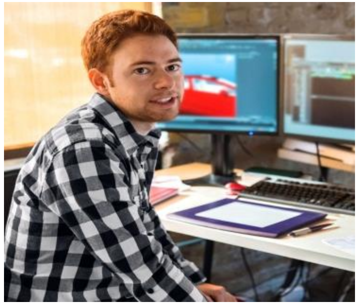
- Security updates and patches and new functions will be installed direct at availability and can not be switched off.
  → Updates must be installed every month, else store will not run any more.

CBB: CURRENT BRANCH FOR BUSINESS

- For Windows 10 Pro, Enterprise and Education alternative to get security updates and patches at availability. New functions with a timely delay.
  → Important updates must be installed every 4 month, can be handled by Enterprise IT.

LTSB: LONG TERM SERVICING BRANCH

- Updates are available but customer don't need to install them.
- 10 years after release security updates and patches.
- No new function updates, no store, no edge, no Cortana.
- Microsoft will designate a long term support rollup every 2-3 years..



Definition of CB / CBB / LTSB

	Available Branches	Update Possibilities	Channel Availability
Windows 10 Home	Current Branch	– Windows Update	– Direct OEM – Retail/ESD – Free upgrade
Windows 10 Professional	Current Branch Current Branch for Business	– Windows Update – Windows Update for Business – WSUS	– Direct OEM – Retail/ESD – Volume Licensing – Free upgrade
Windows 10 Education	Current Branch Current Branch for Business	– Windows Update – Windows Update for Business – WSUS	– Volume Licensing
Windows 10 Enterprise	Current Branch Current Branch for Business Long Term Servicing Branch	– Windows Update – Windows Update for Business – WSUS	– Volume Licensing
Windows 10 IoT Enterprise	Long Term Servicing Branch	– Windows Update – Windows Update for Business – WSUS	– Embedded OEM

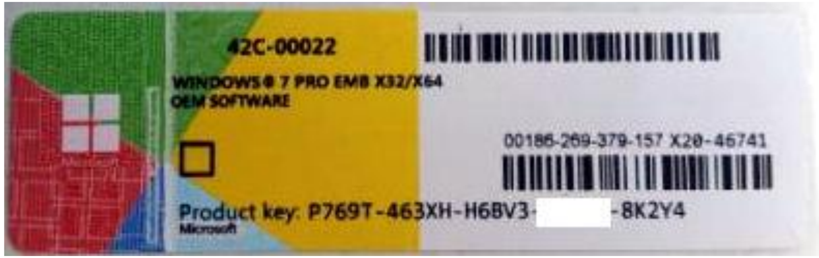
Definition of PKEA and ePKEA

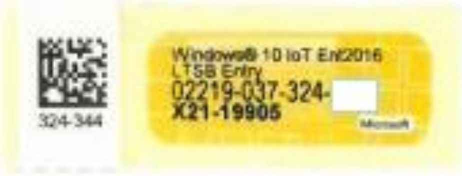
PKEA: PRODUCT KEY APPLICATION

Every single machine has its own license number on license sticker (COA) and must be installed with this number and will be activated under this number.

ePKEA: EMBEDDED PRODUCT KEY APPLICATION

Embedded OEM gets an OEM license number from Microsoft per e-mail and he can use the same OEM license number for every device. The ePKEA is a multiple activation key (MAC).


42C-00022
WINDOWS® 7 PRO EMB X32/X64
OEM SOFTWARE
00186-269-379-157 X20-46741
Product key: P769T-463XH-H6BV3-[redacted]-8K2Y4
Microsoft



Windows 10 IoT Enterprise 2016 / Redstone Licenses

2016 Version = Codename “Redstone” = “Windows 10 Anniversary Update”

Microsoft has changed the vertical license approach (POS / ThinClient / Tablet) to a CPU performance model. No difference in features, same installation media!

3 licenses are available for Windows 10 IoT Enterprise 2016 LTSB and CBB:

“HighEnd”: For high end systems based on an Intel i7 or higher CPU

→~ 150 USD for small quantities

“Value”: For mid range industrial systems with the power of an i3, i5 or Celeron processor.

→ ~ 82 USD for small quantities

“Entry”: For low end systems based on an Intel Atom CPU.

→~ 39 USD for small quantities

Windows 10 IoT Enterprise – What you get

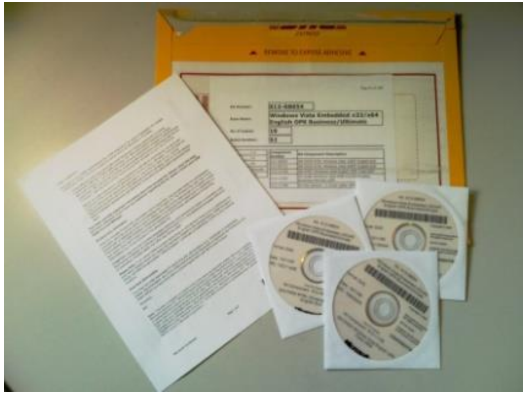
Microsoft OEM Preinstallation Kit = OPK

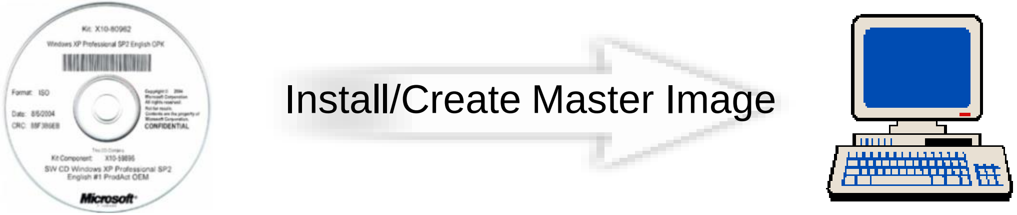
Multi Language User Interface = MUI

OPK only English + MUI (24 languages at the moment)

→Use DISM to de-install English language package if not used

Language Interface Pack = LIP (for other languages than MUI)

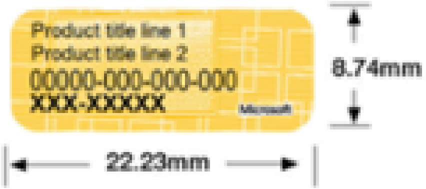




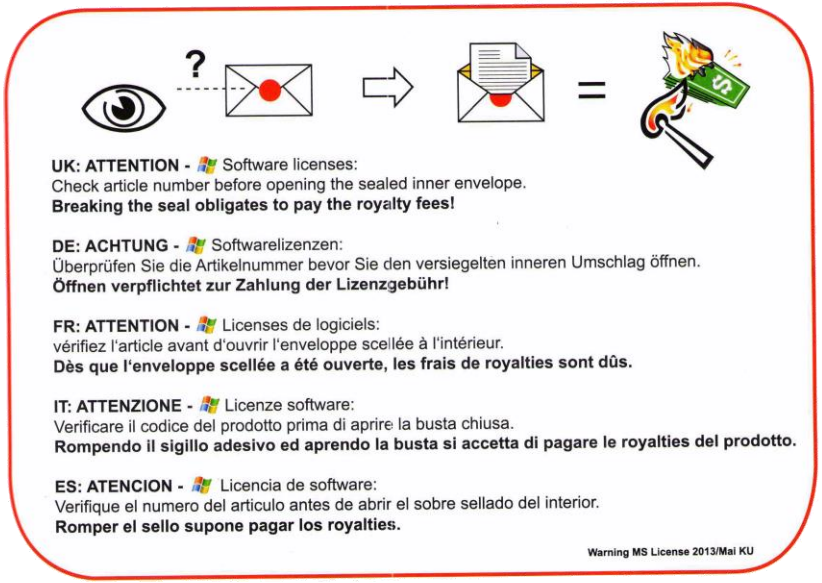
Install/Create Master Image

Attention: License key in OPK is for deployment only! It can not be activated.

Windows 10 IoT Enterprise – What you get



COA (License Sticker) needs to be affixed to the device



UK: ATTENTION - Software licenses:
Check article number before opening the sealed inner envelope.
Breaking the seal obligates to pay the royalty fees!

DE: ACHTUNG - Softwarelizenzen:
Überprüfen Sie die Artikelnummer bevor Sie den versiegelten inneren Umschlag öffnen.
Öffnen verpflichtet zur Zahlung der Lizenzgebühr!

FR: ATTENTION - Licenses de logiciels:
vérifiez l'article avant d'ouvrir l'enveloppe scellée à l'intérieur.
Dès que l'enveloppe scellée a été ouverte, les frais de royalties sont dûs.

IT: ATTENZIONE - Licenze software:
Verificare il codice del prodotto prima di aprire la busta chiusa.
Rompendo il sigillo adesivo ed aprendo la busta si accetta di pagare le royalties del prodotto.

ES: ATENCION - Licencia de software:
Verifique el numero del articulo antes de abrir el sobre sellado del interior.
Romper el sello supone pagar los royalties.

Warning MS License 2013/Mai KU

Windows 10 IoT Enterprise 2016 Standard Installation

Windows 10 IoT Enterprise Standard Installation

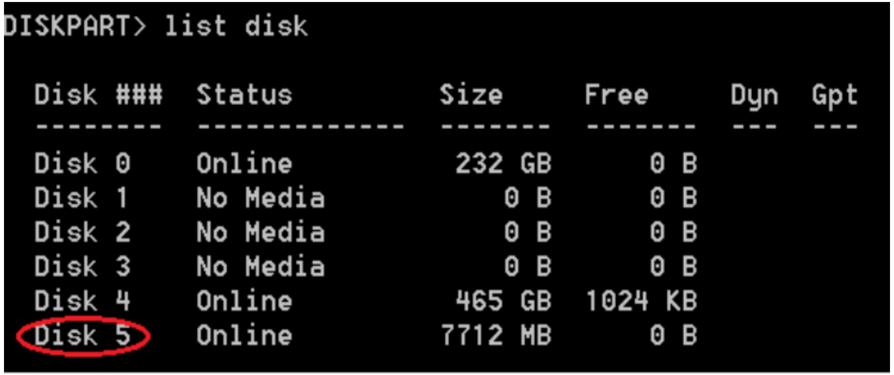
WAYS TO INSTALL WINDOWS 10 IOT ENTERPRISE

– Just burn the OPK ISO file as bootable DVD and install from DVD

– Create bootable USB Stick (min. 8GB) and install from USB

- Prepare bootable NTFS USB stick:
  - ✓ Diskpart
  - ✓ List Disk
  - ✓ Select Disk 5
  - ✓ Clean
  - ✓ Create Partition Primary
  - ✓ Active
  - ✓ Format fs=ntfs quick
  - ✓ Assign

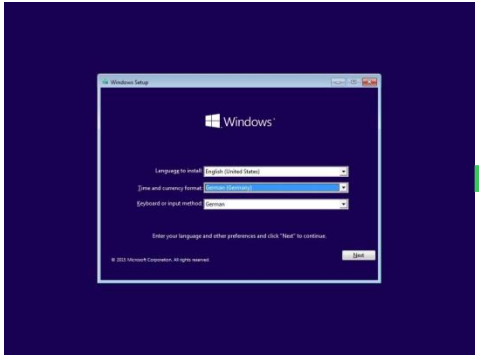
– Just copy the DVD ISO file content 1:1 to the USB Stick



```
DISKPART> list disk

  Disk ###  Status         Size     Free     Dyn  Gpt
  --------  -------------  -------  -------  ---  ---
  Disk 0    Online          232 GB      0 B
  Disk 1    No Media          0 B      0 B
  Disk 2    No Media          0 B      0 B
  Disk 3    No Media          0 B      0 B
  Disk 4    Online          465 GB  1024 KB
  Disk 5    Online         7712 MB      0 B
```

Windows 10 IoT Enterprise Standard Installation



Language to install: English (United States)

Time and currency format: German (Germany)

Keyboard or input method: German

Enter your language and other preferences and click "Next" to continue.

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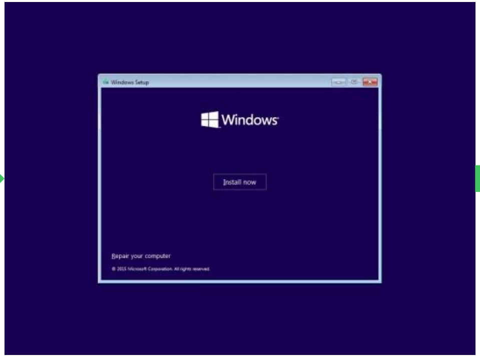

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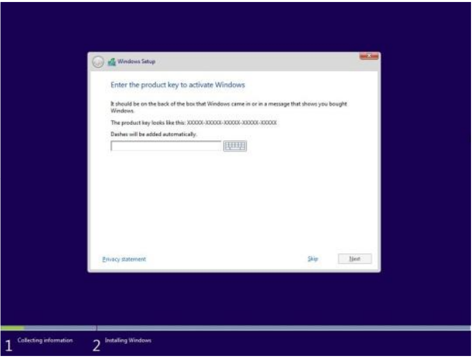
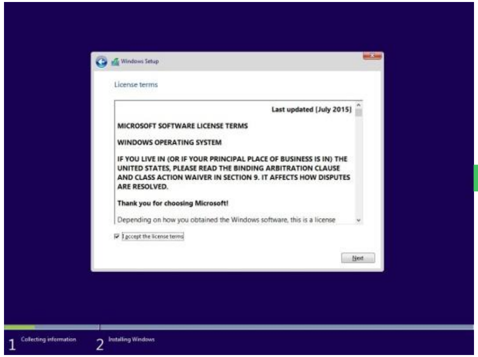


Enter the product key to activate Windows

It should be on the back of the box that Windows came in or in a message that shows you bought Windows.

The product key looks like this: XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

Dashes will be added automatically.



License terms

Last updated [July 2015]

MICROSOFT SOFTWARE LICENSE TERMS

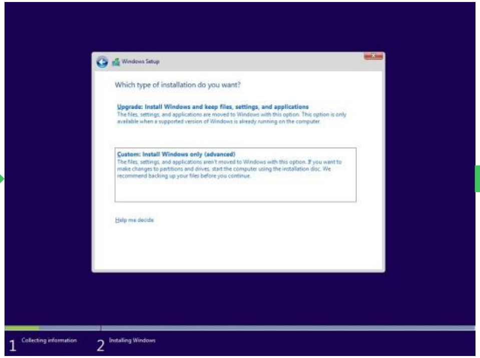
WINDOWS OPERATING SYSTEM

IF YOU LIVE IN (OR IF YOUR PRINCIPAL PLACE OF BUSINESS IS IN) THE UNITED STATES, PLEASE READ THE BINDING ARBITRATION CLAUSE AND CLASS ACTION WAIVER IN SECTION 9. IT AFFECTS HOW DISPUTES ARE RESOLVED.

Thank you for choosing Microsoft!

Depending on how you obtained the Windows software, this is a license

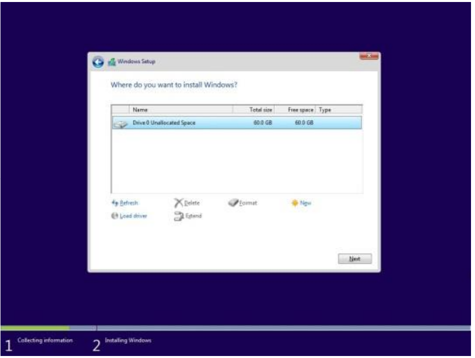
☑ I accept the license terms



Which type of installation do you want?

Upgrade: Install Windows and keep files, settings, and applications
The files, settings, and applications are moved to Windows with this option. This option is only available when a supported version of Windows is already running on the computer.

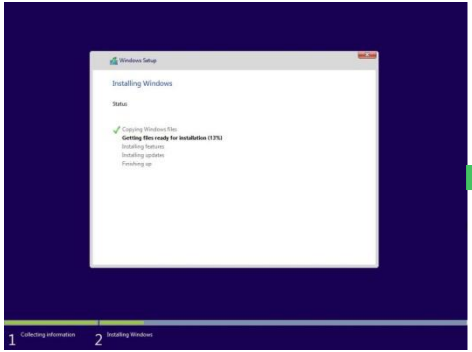
Custom: Install Windows only (advanced)
The files, settings, and applications aren't moved to Windows with this option. If you want to make changes to partitions and drives, start the computer using the installation disc. We recommend backing up your files before you continue.



Where do you want to install Windows?

Name	Total size	Free space	Type
Drive 0 Unallocated Space	60.0 GB	60.0 GB	

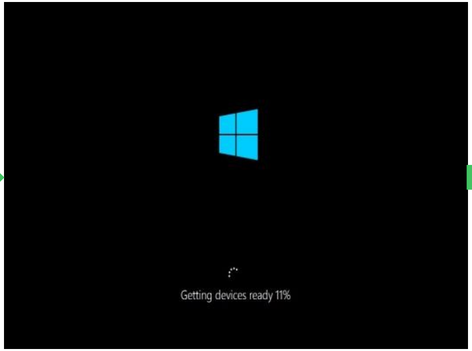
Windows 10 IoT Enterprise Standard Installation



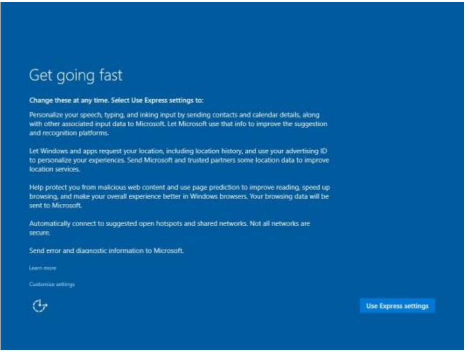
Installing Windows

Status

✓ Copying Windows files
Getting files ready for installation (13%)
Installing features
Installing updates
Finishing up



Getting devices ready 11%



Get going fast

Change these at any time. Select Use Express settings to:

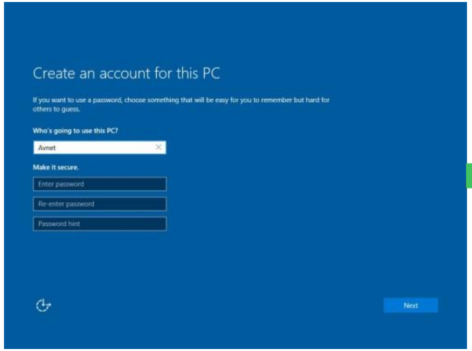
Personalize your speech, typing, and inking input by sending contacts and calendar details, along with other associated input data to Microsoft. Let Microsoft use that info to improve the suggestion and recognition platforms.

Let Windows and apps request your location, including location history, and use your advertising ID to personalize your experiences. Send Microsoft and trusted partners some location data to improve location services.

Help protect you from malicious web content and use page prediction to improve reading, speed up browsing, and make your overall experience better in Windows browsers. Your browsing data will be sent to Microsoft.

Automatically connect to suggested open hotspots and shared networks. Not all networks are secure.

Send error and diagnostic information to Microsoft.



Create an account for this PC

If you want to use a password, choose something that will be easy for you to remember but hard for others to guess.

Who's going to use this PC?

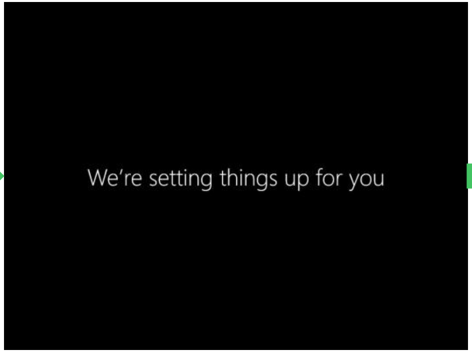
Avnet

Make it secure.

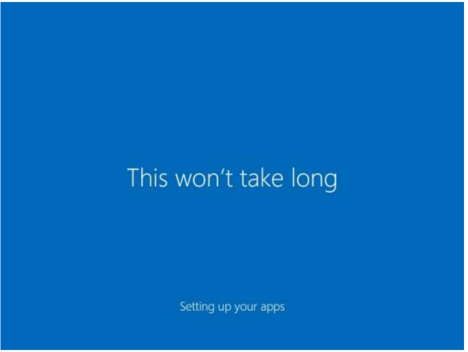
Enter password

Re-enter password

Password hint



We're setting things up for you



This won't take long

Setting up your apps

Windows 10 IoT Enterprise Standard Installation

The Device Lockdown Features

- Overview
- Activate Lockdown Features
- How to Configure the Features

Device Lockdown Features Overview

Overview of the Device Lockdown possibilities in Windows 10 IoT Enterprise 2016 LTSB and CBB.

Write Filters and Overlays	USB Filter	Dialog and Notification Filters	Input Filters	AppLocker and Layout Control	Shell and App Launcher
Easily create read only devices. Improve system uptime	Only allow approved USB peripherals	Block Pop-up Dialog Boxes and system notifications	Block hotkeys and edge gestures to prevent system access	Control which apps are visible and can run	Enable single Win32 or Modern app experience on device

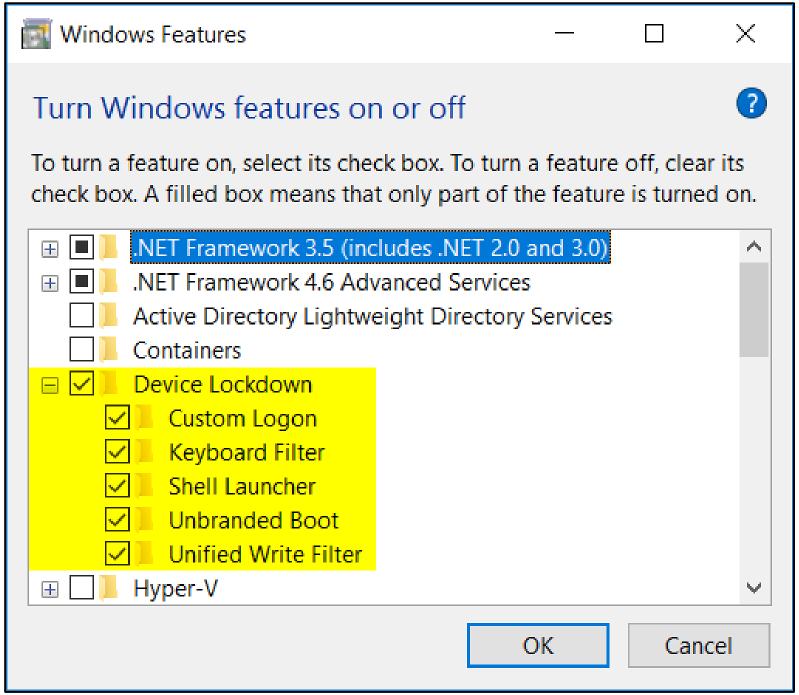
Lockdown Features Comparison

Capability / Embedded Feature	WES7	Industry 8.1	Windows 10 IoT Enterprise 2016
Protect devices physical storage media	EWF / FBWF	EWF / UWF	UWF (Unified Write Filter)
Boot fast to a known state on the device (RAM Image boot from Hibernate)	HORM	-	HORM
Suppress Windows UI Elements during Windows logon and shutdown	Embedded Logon	Embedded Logon	Embedded Logon
Block edge gestures	-	Gesture Filter	Group Policies
Block hotkeys and other keys / key combinations	Keyboard Filter	Keyboard Filter	Keyboard Filter
Launch a API32 desktop application on login	Shell Launcher	Shell Launcher	Shell Launcher
Launch a Universal Windows (modern style) app on login and lock system	-	Application Launcher	Assigned Access
Suppress system dialogs	Dialog Box Filter	Dialog Filter	Group Policies
Suppress toast notifications	-	Toast Filter	Group Policies
Control processes that can run	AppLocker	AppLocker	AppLocker
Restrict USB devices / peripherals on system	Group Policies	USB Filter	Group Policies
Suppress Windows UI elements displayed during boot	Embedded Boot	Embedded Boot	Unbranded Boot
Custom brand during boot	-	UEFI BIOS custom logo	UEFI BIOS custom logo
Suppress Windows UI elements displayed during logon / logoff	Embedded Logon	Embedded Logon	Custom Logon
Configure lockdown / embedded features	ICE	ELM	None ☹ → Contact Silica! ☺

How to activate the Device Lockdown features?

Using the Control Panel to install the Device Lockdown features.

- Just go to the **Control Panel / Programs** and click on **Turn Windows features on or off** and select the **Device Lockdown features** you need. Click **OK** to install and **Restart**



Windows Features

Turn Windows features on or off

To turn a feature on, select its check box. To turn a feature off, clear its check box. A filled box means that only part of the feature is turned on.

- ■ .NET Framework 3.5 (includes .NET 2.0 and 3.0)
- ■ .NET Framework 4.6 Advanced Services
- □ Active Directory Lightweight Directory Services
- □ Containers
- ☑ Device Lockdown
  - ☑ Custom Logon
  - ☑ Keyboard Filter
  - ☑ Shell Launcher
  - ☑ Unbranded Boot
  - ☑ Unified Write Filter
- □ Hyper-V

Win 10 IoT Lockdown: Unified Write Filter

SECTOR BASED PROTECTION

- Create read only devices
- Protect system against write operations

REGISTRY EXCLUSION

- Improve system up-time
- Reduce IT support & improve compliance
- Secure system

FILE & FOLDER EXCLUSION

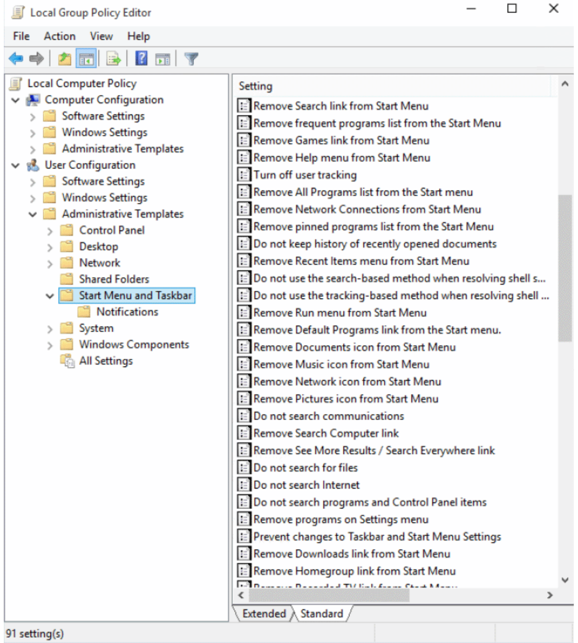
- System must be designed for UWF filter
- Attention: Can increase boot-time

Win 10 IoT Lockdown: USB Group Policy

- Prevent installation of all devices
- Allow users to install only authorized devices
- Prevent installation of prohibited devices
- Control read and write permissions on removable media
- Secure system
- Implemented in local system group policy

Win 10 IoT Lockdown: Granular UX Control

Fully customize the Start Menu, Start Screen taskbar to a desired layout

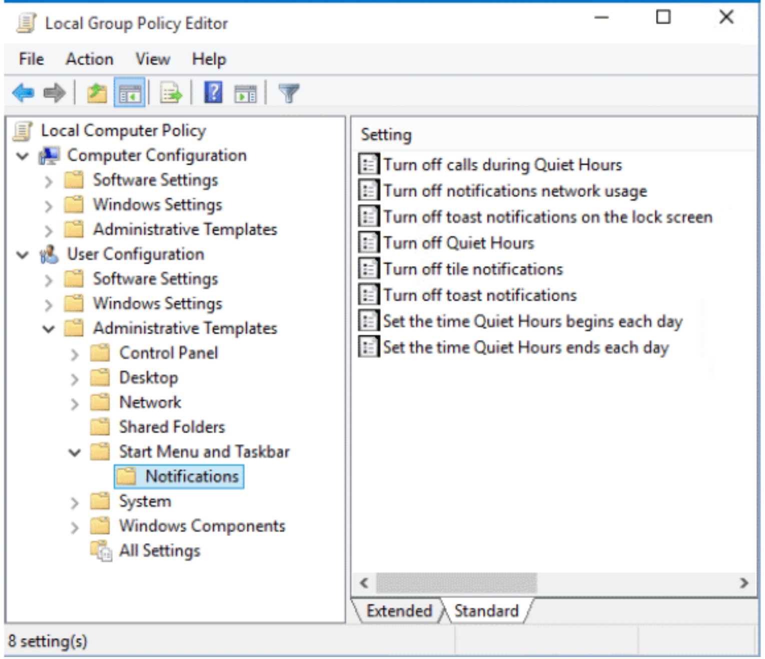


Setting

- Remove Search link from Start Menu
- Remove frequent programs list from the Start Menu
- Remove Games link from Start Menu
- Remove Help menu from Start Menu
- Turn off user tracking
- Remove All Programs list from the Start menu
- Remove Network Connections from Start Menu
- Remove pinned programs list from the Start Menu
- Do not keep history of recently opened documents
- Remove Recent Items menu from Start Menu
- Do not use the search-based method when resolving shell s...
- Do not use the tracking-based method when resolving shell ...
- Remove Run menu from Start Menu
- Remove Default Programs link from the Start menu.
- Remove Documents icon from Start Menu
- Remove Music icon from Start Menu
- Remove Network icon from Start Menu
- Remove Pictures icon from Start Menu
- Do not search communications
- Remove Search Computer link
- Remove See More Results / Search Everywhere link
- Do not search for files
- Do not search Internet
- Do not search programs and Control Panel items
- Remove programs on Settings menu
- Prevent changes to Taskbar and Start Menu Settings
- Remove Downloads link from Start Menu
- Remove Homegroup link from Start Menu
- Remove Recorded TV link from Start Menu

91 setting(s)

Suppress toast notifications



Setting

- Turn off calls during Quiet Hours
- Turn off notifications network usage
- Turn off toast notifications on the lock screen
- Turn off Quiet Hours
- Turn off tile notifications
- Turn off toast notifications
- Set the time Quiet Hours begins each day
- Set the time Quiet Hours ends each day

8 setting(s)

Configuration of the Device Lockdown features

To configure the Device Lockdown features you have several possibilities depending on the feature:

- **Image Configuration Designer (ICD**) with **"Provisioning Package"**
- **System Image Manager (SIM)**
- **Group Policy Editor** to change policy settings
- Command line management tools e.g. **"uwfmgr.exe"** for the **Universal Write Filter**
- **Registry Editor** to change settings in the registry
- **PowerShell** scripts
- **Windows Management Instrumentation (WMI)**

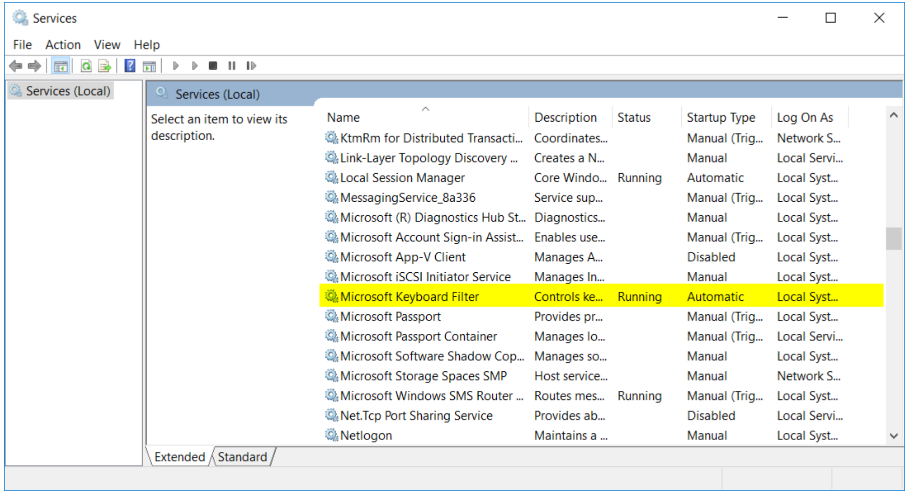
Note: find documentation about customizing an Enterprise Desktop System at Microsoft: https://msdn.microsoft.com/en-us/library/windows/hardware/mt571991(v=vs.85).aspx

DEMO: Keyboard Filter

DEMO: Keyboard Filter

Check if your Keyboard Filter service is running:

⚠ When the Keyboard Filter is not working please check if the “Microsoft Keyboard Filter” Service is configured to “**Startup Type Automatic**” and if the service is “**Running**”.



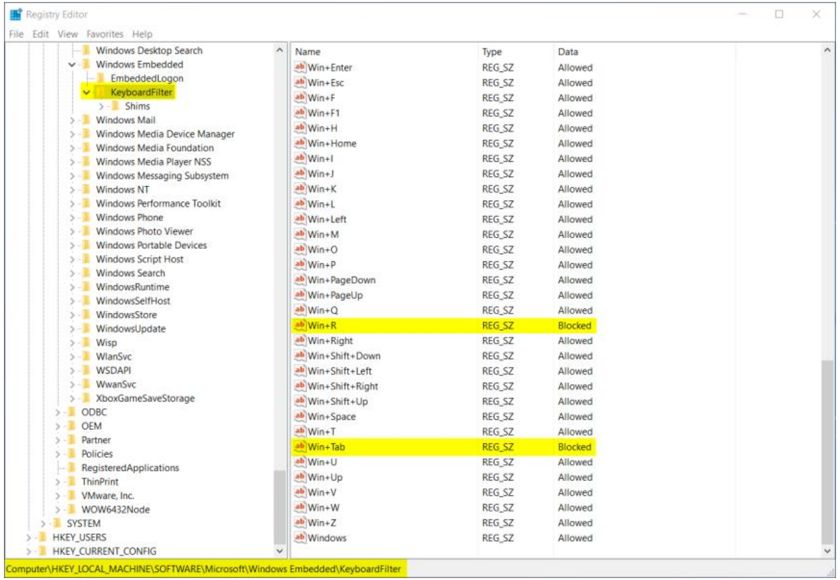
Select an item to view its description.

Name	Description	Status	Startup Type	Log On As
KtmRm for Distributed Transacti...	Coordinates...		Manual (Trig...	Network S...
Link-Layer Topology Discovery ...	Creates a N...		Manual	Local Servi...
Local Session Manager	Core Windo...	Running	Automatic	Local Syst...
MessagingService_8a336	Service sup...		Manual (Trig...	Local Syst...
Microsoft (R) Diagnostics Hub St...	Diagnostics...		Manual	Local Syst...
Microsoft Account Sign-in Assist...	Enables use...		Manual (Trig...	Local Syst...
Microsoft App-V Client	Manages A...		Disabled	Local Syst...
Microsoft iSCSI Initiator Service	Manages In...		Manual	Local Syst...
Microsoft Keyboard Filter	Controls ke...	Running	Automatic	Local Syst...
Microsoft Passport	Provides pr...		Manual (Trig...	Local Syst...
Microsoft Passport Container	Manages lo...		Manual (Trig...	Local Servi...
Microsoft Software Shadow Cop...	Manages so...		Manual	Local Syst...
Microsoft Storage Spaces SMP	Host service...		Manual	Network S...
Microsoft Windows SMS Router ...	Routes mes...	Running	Manual (Trig...	Local Syst...
Net.Tcp Port Sharing Service	Provides ab...		Disabled	Local Servi...
Netlogon	Maintains a ...		Manual	Local Syst...

DEMO: Keyboard Filter

You can also check with the Registry Editor the Keyboard Filter Settings and make changes if necessary.

HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows Embedded\KeyboardFilter



Name	Type	Data
Win+Enter	REG_SZ	Allowed
Win+Esc	REG_SZ	Allowed
Win+F	REG_SZ	Allowed
Win+F1	REG_SZ	Allowed
Win+H	REG_SZ	Allowed
Win+Home	REG_SZ	Allowed
Win+I	REG_SZ	Allowed
Win+J	REG_SZ	Allowed
Win+K	REG_SZ	Allowed
Win+L	REG_SZ	Allowed
Win+Left	REG_SZ	Allowed
Win+M	REG_SZ	Allowed
Win+O	REG_SZ	Allowed
Win+P	REG_SZ	Allowed
Win+PageDown	REG_SZ	Allowed
Win+PageUp	REG_SZ	Allowed
Win+Q	REG_SZ	Allowed
Win+R	REG_SZ	Blocked
Win+Right	REG_SZ	Allowed
Win+Shift+Down	REG_SZ	Allowed
Win+Shift+Left	REG_SZ	Allowed
Win+Shift+Right	REG_SZ	Allowed
Win+Shift+Up	REG_SZ	Allowed
Win+Space	REG_SZ	Allowed
Win+T	REG_SZ	Allowed
Win+Tab	REG_SZ	Blocked
Win+U	REG_SZ	Allowed
Win+Up	REG_SZ	Allowed
Win+V	REG_SZ	Allowed
Win+W	REG_SZ	Allowed
Win+Z	REG_SZ	Allowed
Windows	REG_SZ	Allowed

Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows Embedded\KeyboardFilter

DEMO: Keyboard Filter

ATTENTION: There is a Breakout-KeyScancode defined per default to exit to the login screen when pressing 5 times the defined key!

Default: ScanCode: 5b -> Windows Key

Set this value to 0 if not used!

HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows Embedded\KeyboardFilter

DEMO: Shell Launcher

DEMO: Shell Launcher

- **Shell Launcher is only working for Win32 Apps and not for the new Universal Apps. For this you can use the Option Assigned Access within the user configuration of Windows 10.**

- **You can use PowerShell to configure Shell Launcher. You can configure different shells for different users e.g. one user is using your self developed user interface and an administrator is using the standard Explorer shell.**

DEMO: Shell Launcher

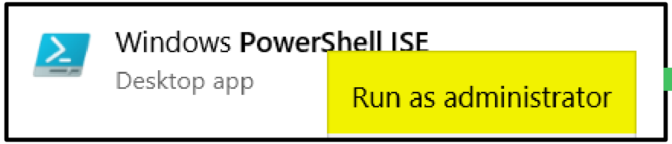
The following script will set the “**default shell**” to “**cmd.exe**” , will set “**iexplore.exe**” for a standard user with the name “**Silica**” and will set “**explorer.exe**” for all users in the group “**Administrators**”.

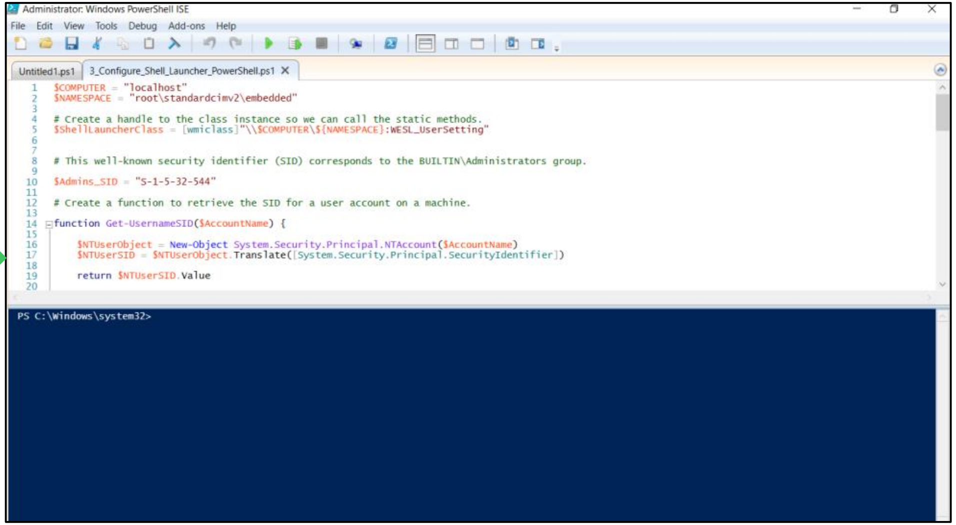
```
$COMPUTER = "localhost"
$NAMESPACE = "root\standardcimv2\embedded"

# Create a handle to the class instance so we can call the static methods.
$ShellLauncherClass = [wmiclass]"\\$COMPUTER\${NAMESPACE}:WESL_UserSetting"

# This well-known security identifier (SID) corresponds to the BUILTIN\Administrators group.

$Admins_SID = "S-1-5-32-544"

# Create a function to retrieve the SID for a user account on a machine.

function Get-UsernameSID($AccountName) {

    $NTUserObject = New-Object System.Security.Principal.NTAccount($AccountName)
    $NTUserSID = $NTUserObject.Translate([System.Security.Principal.SecurityIdentifier])

    return $NTUserSID.Value

}

# Get the SID for a user account named "Silica". Rename "Silica" to an existing account on your system to test this
script.

$Silica_SID = Get-UsernameSID("Silica")

# Define actions to take when the shell program exits.

$restart_shell = 0
$restart_device = 1
$shutdown_device = 2
```

```
# This example sets the command prompt as the default shell, and restarts the device if the command prompt is
closed.
$ShellLauncherClass.SetDefaultShell("cmd.exe", $restart_device)

# Display the default shell to verify that it was added correctly.

$DefaultShellObject = $ShellLauncherClass.GetDefaultShell()

"`nDefault Shell is set to " + $DefaultShellObject.Shell + " and the default action is set to " +
$DefaultShellObject.defaultaction

# Set Internet Explorer in Kiosk Mode as the shell for "Silica", and  restart Internet Explorer if closed.

$ShellLauncherClass.SetCustomShell($Silica_SID, "C:\Program Files\Internet Explorer\iexplore.exe -k
http://www.avnet-silica.com", ($null), ($null), $restart_shell)

# Set Explorer as the shell for administrators.

$ShellLauncherClass.SetCustomShell($Admins_SID, "explorer.exe")

# View all the custom shells defined.

"`nCurrent settings for custom shells:"
Get-WmiObject -namespace $NAMESPACE -computer $COMPUTER -class WESL_UserSetting | Select Sid,
Shell, DefaultAction

# Enable Shell Launcher
$ShellLauncherClass.SetEnabled($TRUE)

$IsShellLauncherEnabled = $ShellLauncherClass.IsEnabled()

"`nEnabled is set to " + $IsShellLauncherEnabled.Enabled
```

DEMO: Shell Launcher

- When you have saved your PowerShell script you can copy it to your target System where the Shell Launcher feature is already activated.
- Open an administrative “**PowerShell ISE**” session and “**open**” your created script.




Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1
3_Configure_Shell_Launcher_PowerShell.ps1

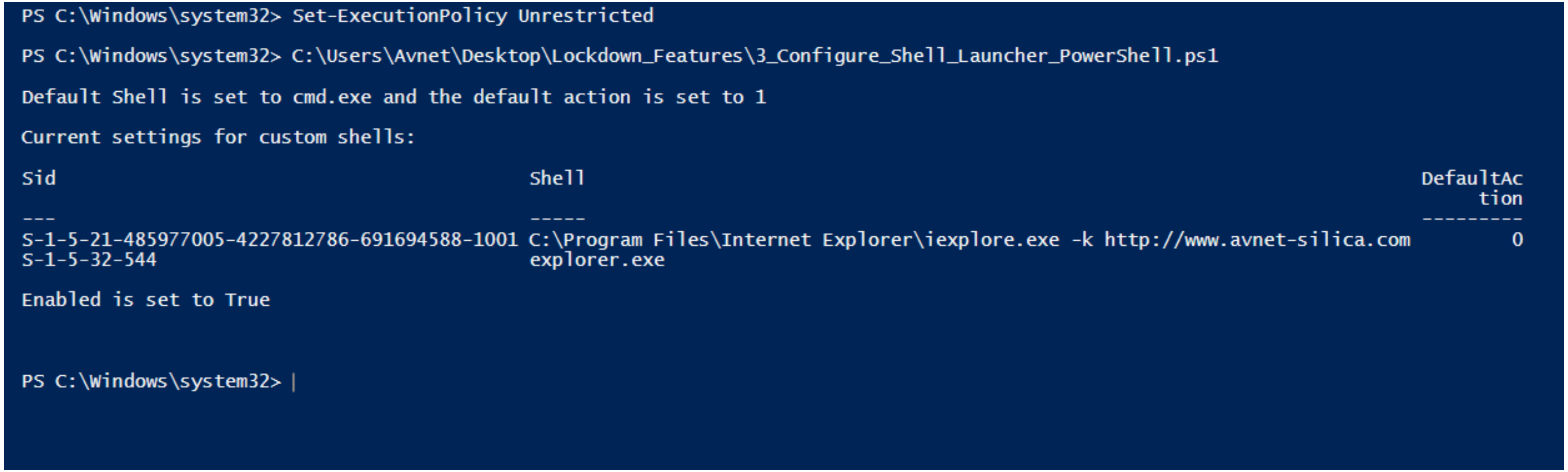
```
$COMPUTER = "localhost"
$NAMESPACE = "root\standardcimv2\embedded"

# Create a handle to the class instance so we can call the static methods.
$ShellLauncherClass = [wmiclass]"\\$COMPUTER\${NAMESPACE}:WESL_UserSetting"


# This well-known security identifier (SID) corresponds to the BUILTIN\Administrators group.

$Admins_SID = "S-1-5-32-544"

# Create a function to retrieve the SID for a user account on a machine.

function Get-UsernameSID($AccountName) {

    $NTUserObject = New-Object System.Security.Principal.NTAccount($AccountName)
    $NTUserSID = $NTUserObject.Translate([System.Security.Principal.SecurityIdentifier])

    return $NTUserSID.Value

```

```
PS C:\Windows\system32>
```

DEMO: Shell Launcher

⚠ Before you can execute your PowerShell scripts you have to allow that to your system. Execute in the following command in the adminstrative Power Shell and than execute the script.

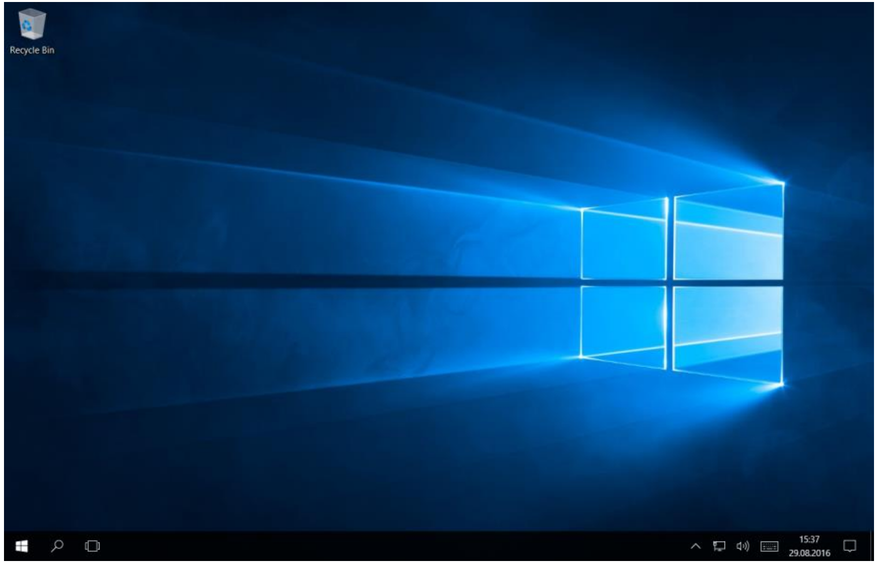
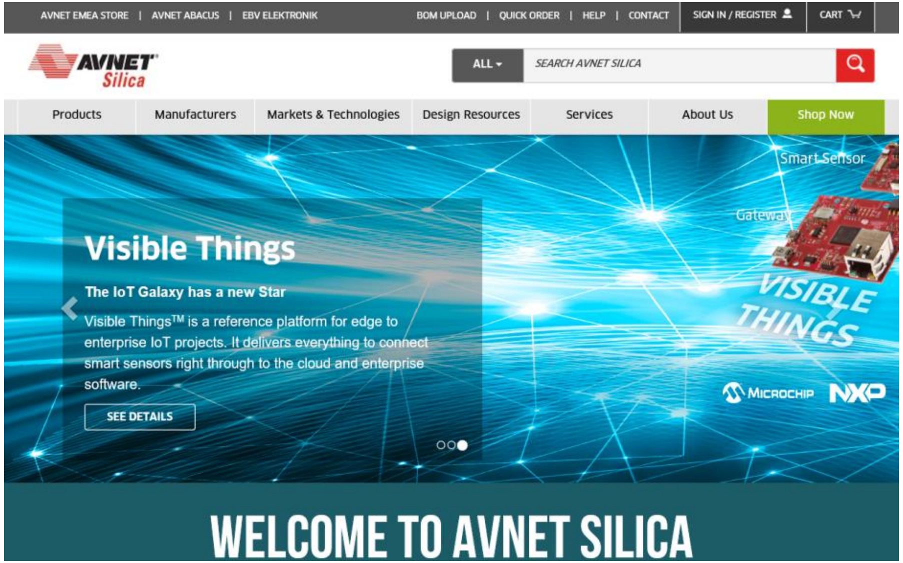
Set-ExecutionPolicy Unrestricted



```
PS C:\Windows\system32> Set-ExecutionPolicy Unrestricted

PS C:\Windows\system32> C:\Users\Avnet\Desktop\Lockdown_Features\3_Configure_Shell_Launcher_PowerShell.ps1

Default Shell is set to cmd.exe and the default action is set to 1

Current settings for custom shells:

Sid                                          Shell                                                                          DefaultAc
                                                                                                                                 tion
---                                          -----                                                                          ---------
S-1-5-21-485977005-4227812786-691694588-1001 C:\Program Files\Internet Explorer\iexplore.exe -k http://www.avnet-silica.com         0
S-1-5-32-544                                 explorer.exe

Enabled is set to True


PS C:\Windows\system32> |
```

DEMO: Shell Launcher

Result when the user is logged on:

USER AVNET	USER SILICA
	

Visible Things

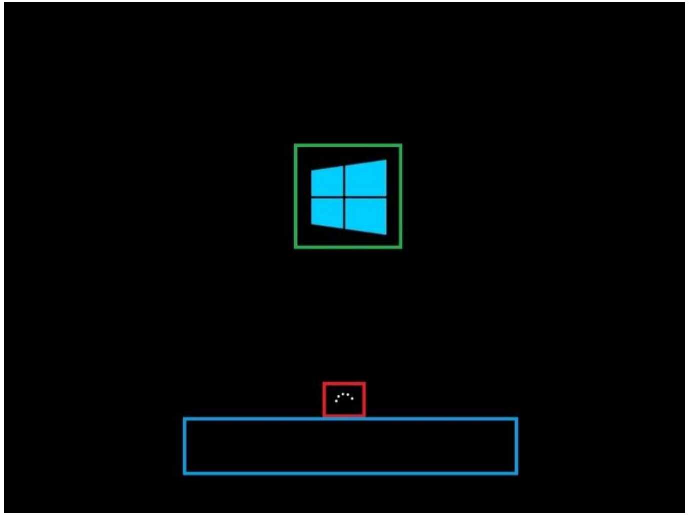
The IoT Galaxy has a new Star

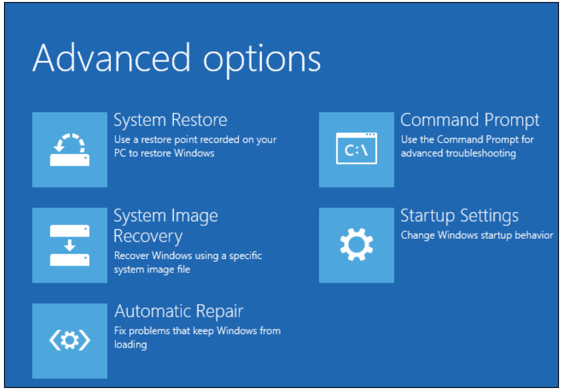
Visible Things™ is a reference platform for edge to enterprise IoT projects. It delivers everything to connect smart sensors right through to the cloud and enterprise software.

DEMO: Unbranded Boot

DEMO: Unbranded Boot

With Unbranded Boot You can suppress Windows elements that appear when Windows starts or resumes and can suppress the crash screen when Windows encounters an error that it cannot recover from.





Advanced options

System Restore
Use a restore point recorded on your PC to restore Windows

Command Prompt
Use the Command Prompt for advanced troubleshooting

System Image Recovery
Recover Windows using a specific system image file

Startup Settings
Change Windows startup behavior

Automatic Repair
Fix problems that keep Windows from loading

DEMO: Unbranded Boot

Using BCDEDIT to configure the Unbranded Boot feature on your System during runtime.

- To disable the F8 key during startup to prevent access to the Advanced startup options menu:
  - **bcdedit.exe -set {globalsettings} advancedoptions false**

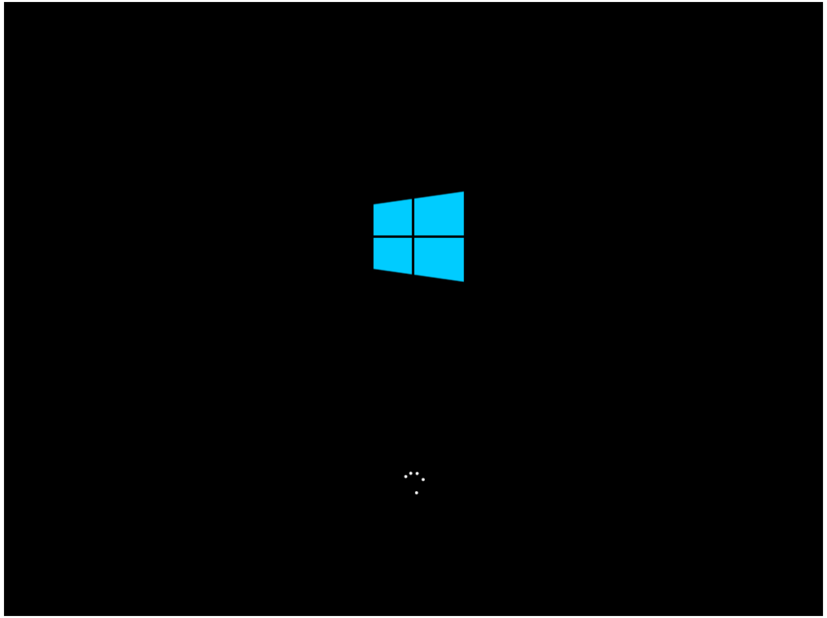
- To disable the F10 key during startup to prevent access to the Advanced startup options menu:
  - **bcdedit.exe -set {globalsettings} optionsedit false**

- To suppress all Windows UI elements (logo, status indicator, and status message) during startup:
  - **bcdedit.exe -set {globalsettings} bootuxdisabled on**

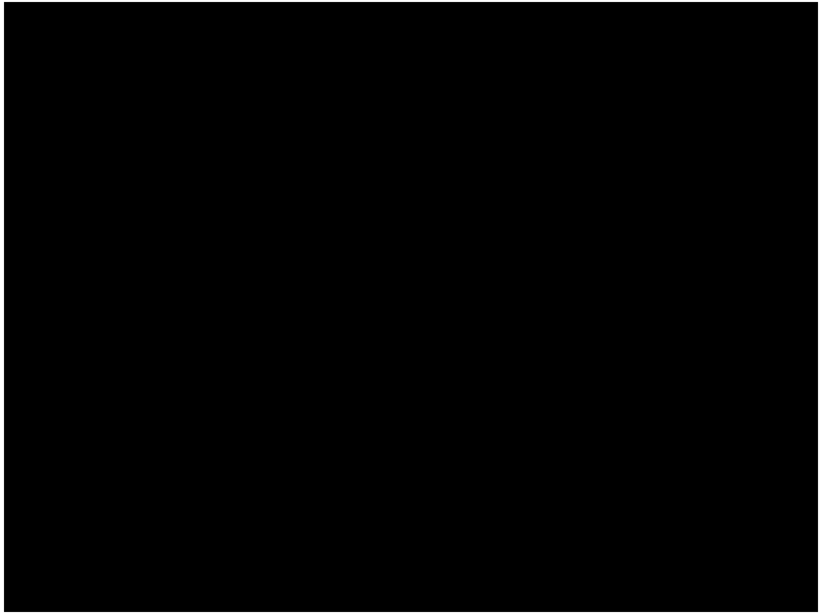
DEMO: Unbranded Boot

Result when the your System is powering up:

BEFORE BCDEDIT COMMAND



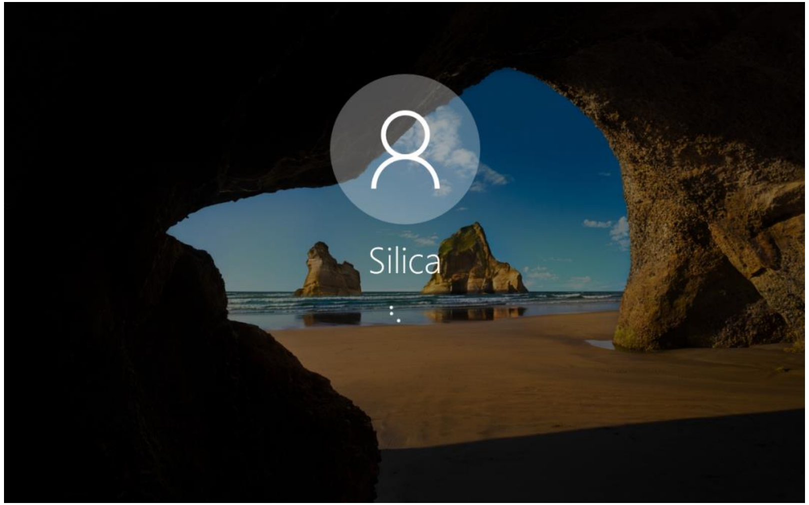
AFTER BCDEDIT COMMAND

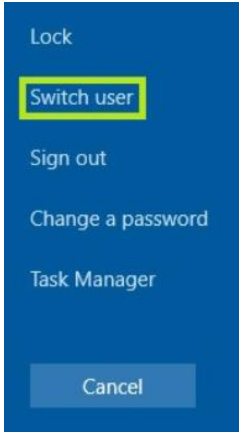


DEMO: Custom Logon

DEMO: Custom Logon

You can use the Custom Logon feature to suppress Windows 10 UI elements that relate to the Welcome screen and shutdown screen. For example, you can hide the logon UI for an AutoLogon user or hide buttons from the Welcome screen like the Switch user button or the power button.




Lock

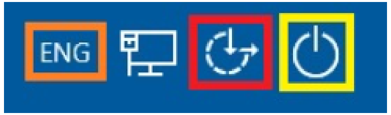
Switch user

Sign out

Change a password

Task Manager

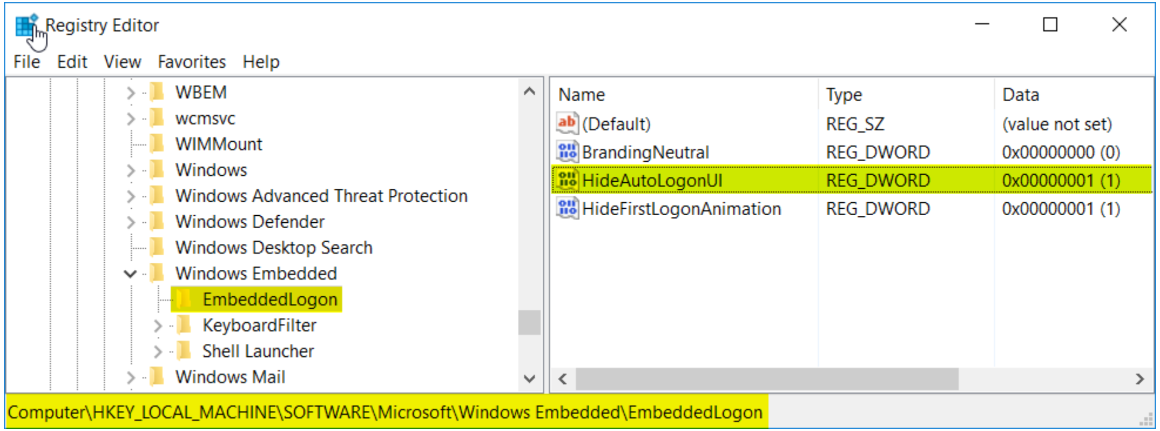
Cancel



DEMO: Custom Logon

- In the Registry Editor navigate to the Key:
  HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows Embedded\EmbeddedLogon

- Change the REG_DWORD “**HideAutoLogonUI**” from “**0**” to “**1**”.



WBEM
wcmsvc
WIMMount
Windows
Windows Advanced Threat Protection
Windows Defender
Windows Desktop Search
Windows Embedded
EmbeddedLogon
KeyboardFilter
Shell Launcher
Windows Mail

Name	Type	Data
(Default)	REG_SZ	(value not set)
BrandingNeutral	REG_DWORD	0x00000000 (0)
HideAutoLogonUI	REG_DWORD	0x00000001 (1)
HideFirstLogonAnimation	REG_DWORD	0x00000001 (1)

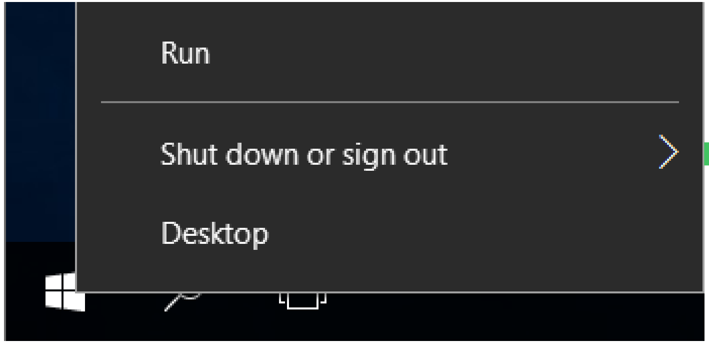
Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows Embedded\EmbeddedLogon

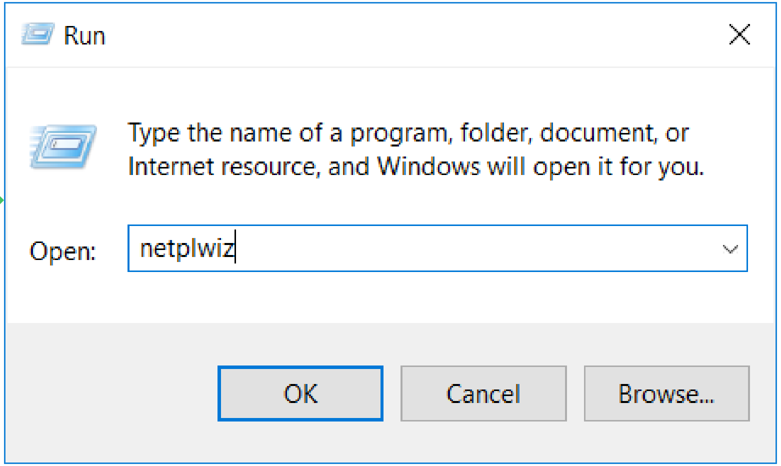
- Reboot your System

DEMO: Custom Logon

Using the Registry to hide the logon UI for an user where AutoLogon is specified.

- To specify **AutoLogon** for a specific User. Logon to your System with an administrative account and **right click** to the **Start Menu**, select **“Run”** and type in **“netplwiz”.**



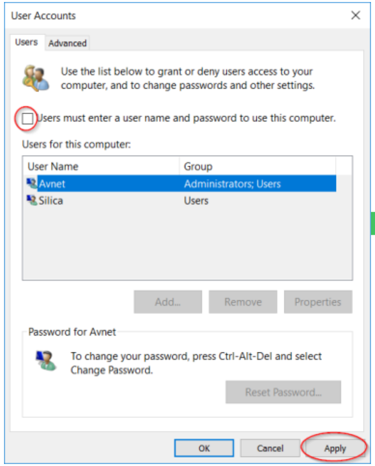


Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: netplwiz

DEMO: Custom Logon

Deselect “**Users must enter a user name and password to use this computer**” and click on “**Apply**”. In the Automatically sign in window type is the “**User name**” and the “**Password**” for the user you want to sign in automatically.



User Accounts

Use the list below to grant or deny users access to your computer, and to change passwords and other settings.

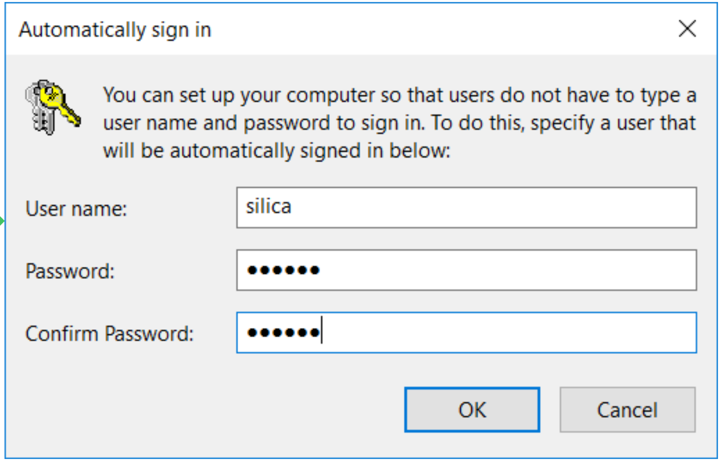
□ Users must enter a user name and password to use this computer.

Users for this computer:

User Name	Group
Avnet	Administrators; Users
Silica	Users

Password for Avnet

To change your password, press Ctrl-Alt-Del and select Change Password.



Automatically sign in

You can set up your computer so that users do not have to type a user name and password to sign in. To do this, specify a user that will be automatically signed in below:

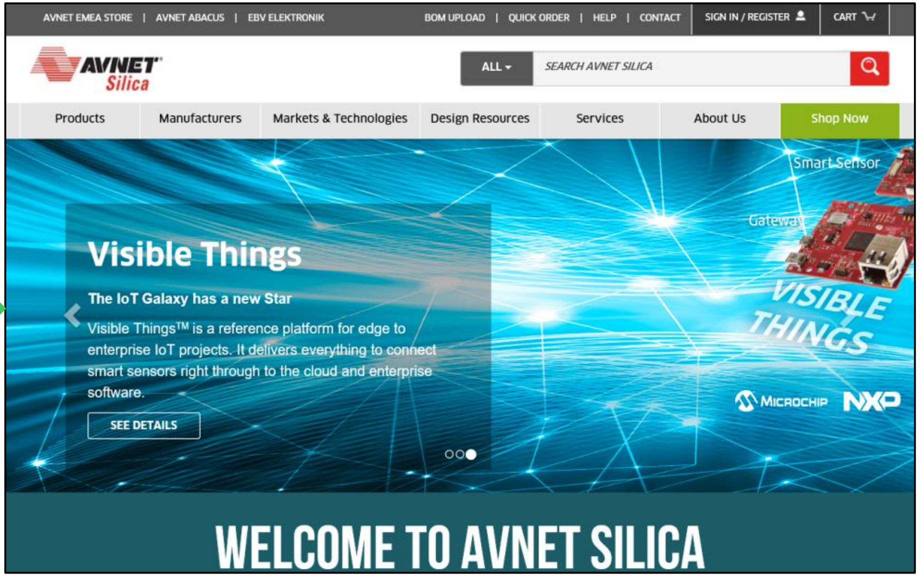
User name: silica

Password: ••••••

Confirm Password: ••••••

DEMO: Custom Logon

Now the UI during the logon phase of the user is completely hidden. You will see directly the specified shell.



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SEE DETAILS

WELCOME TO AVNET SILICA

DEMO: Unified Write Filter

DEMO: Unified Write Filter

You can use the Unified Write Filter (UWF) feature on your device to help protect your physical storage media, including most standard writable storage types that are supported by Microsoft Windows, such as physical hard disks, solid-state drives, internal USB devices, external SATA devices, and so on.

⚠ **You cannot use UWF to protect external removable drives, USB devices or flash drives.**

Note: UWF fully supports the NTFS file system; however, during device startup, NTFS file system journal files can write to a protected volume before UWF has loaded and started protecting the volume.

DEMO: Unified Write Filter

Universal Write Filter in the version of Windows 10 IoT Enterprise 2016

- Overlay could be configured as RAM or DISK overlay.
- Exclusions could be specified.
- HORM (Hibernate Once Resume Many) is back.

DEMO: Unified Write Filter

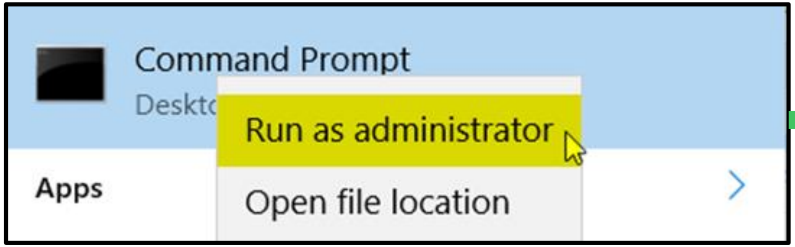
The first time you enable UWF on your device, UWF makes the following changes to your system to improve the performance of UWF:

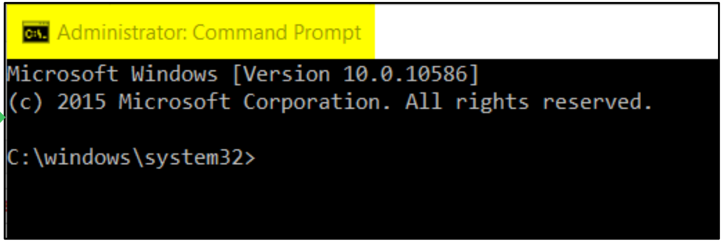
- Paging files are disabled.
- System restore is disabled.
- SuperFetch is disabled.
- File indexing service is turned off.
- Fast boot is disabled.
- Defragmentation service is turned off.
- BCD setting **bootstatuspolicy** is set to **ignoreallfailures**.

DEMO: Unified Write Filter

Configuring UWF with the Command Line tool “uwfmgr.exe”.

– Open an administrative command prompt.

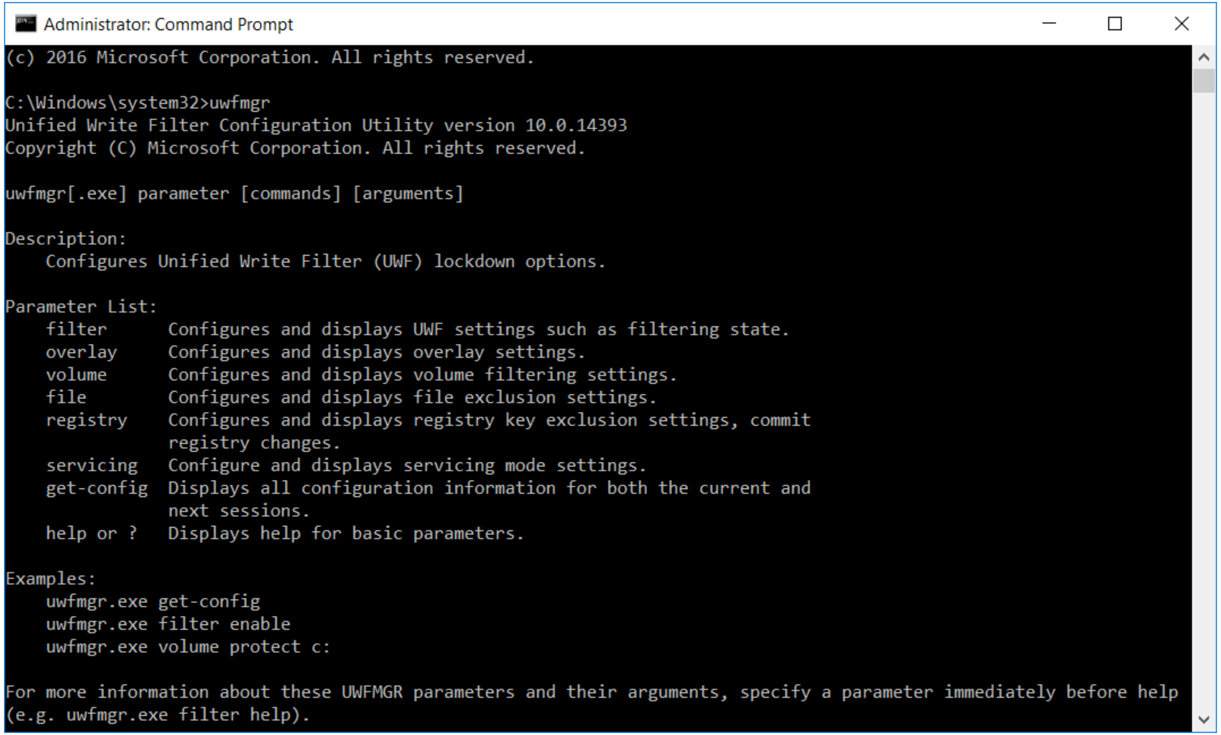




```
Microsoft Windows [Version 10.0.10586]
(c) 2015 Microsoft Corporation. All rights reserved.

C:\windows\system32>
```

– Just type **“uwfmgr.exe”** and all options and parameters will be displayed.

DEMO: Unified Write Filter



```
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Windows\system32>uwfmgr
Unified Write Filter Configuration Utility version 10.0.14393
Copyright (C) Microsoft Corporation. All rights reserved.

uwfmgr[.exe] parameter [commands] [arguments]

Description:
    Configures Unified Write Filter (UWF) lockdown options.

Parameter List:
    filter      Configures and displays UWF settings such as filtering state.
    overlay     Configures and displays overlay settings.
    volume      Configures and displays volume filtering settings.
    file        Configures and displays file exclusion settings.
    registry    Configures and displays registry key exclusion settings, commit
                registry changes.
    servicing   Configure and displays servicing mode settings.
    get-config  Displays all configuration information for both the current and
                next sessions.
    help or ?   Displays help for basic parameters.

Examples:
    uwfmgr.exe get-config
    uwfmgr.exe filter enable
    uwfmgr.exe volume protect c:

For more information about these UWFMGR parameters and their arguments, specify a parameter immediately before help
(e.g. uwfmgr.exe filter help).
```

DEMO: Unified Write Filter

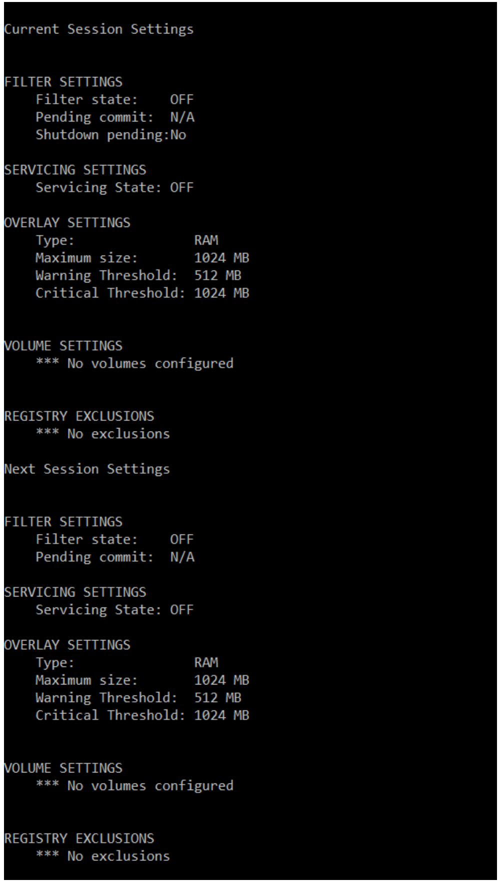
We will do the following settings in an example.

- We will **“enable”** the **“UWF”**
- We will **“protect”** the Volume **“C:\”**
- We will **“exclude”** the directory **“c:\test”** from the filter
- We will change the **“Overlay Type”** from **“RAM”** to **“DISK”**
- We will Check the **“settings”** and test the filter

DEMO: Unified Write Filter

See current configuration of UWF.

uwfmgr get-config

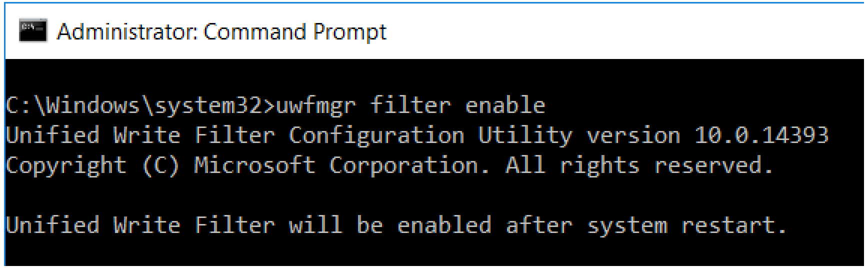


```
Current Session Settings


FILTER SETTINGS
    Filter state:    OFF
    Pending commit:  N/A
    Shutdown pending:No

SERVICING SETTINGS
    Servicing State: OFF

OVERLAY SETTINGS
    Type:               RAM
    Maximum size:       1024 MB
    Warning Threshold:  512 MB
    Critical Threshold: 1024 MB


VOLUME SETTINGS
    *** No volumes configured


REGISTRY EXCLUSIONS
    *** No exclusions

Next Session Settings


FILTER SETTINGS
    Filter state:    OFF
    Pending commit:  N/A

SERVICING SETTINGS
    Servicing State: OFF

OVERLAY SETTINGS
    Type:               RAM
    Maximum size:       1024 MB
    Warning Threshold:  512 MB
    Critical Threshold: 1024 MB


VOLUME SETTINGS
    *** No volumes configured


REGISTRY EXCLUSIONS
    *** No exclusions
```

DEMO: Unified Write Filter

Enable UWF

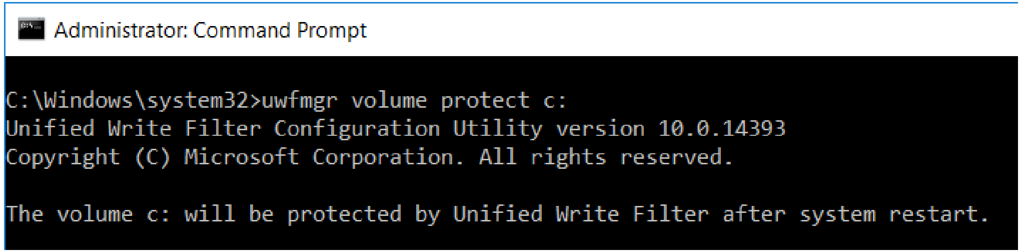
uwfmgr filter enable



```
C:\Windows\system32>uwfmgr filter enable
Unified Write Filter Configuration Utility version 10.0.14393
Copyright (C) Microsoft Corporation. All rights reserved.

Unified Write Filter will be enabled after system restart.
```

Protect Volume C:

uwfmgr volume protect c:

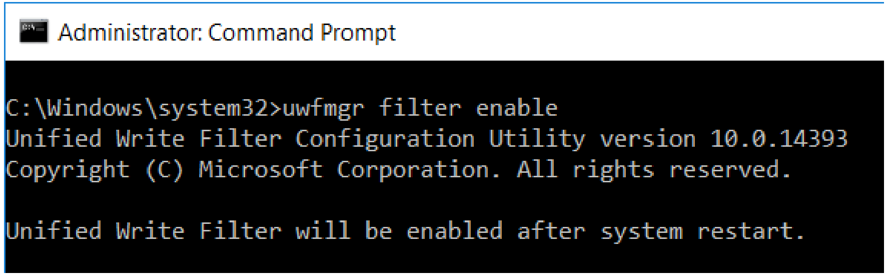


```
C:\Windows\system32>uwfmgr volume protect c:
Unified Write Filter Configuration Utility version 10.0.14393
Copyright (C) Microsoft Corporation. All rights reserved.

The volume c: will be protected by Unified Write Filter after system restart.
```

DEMO: Unified Write Filter

Exclude folder “c:\test”

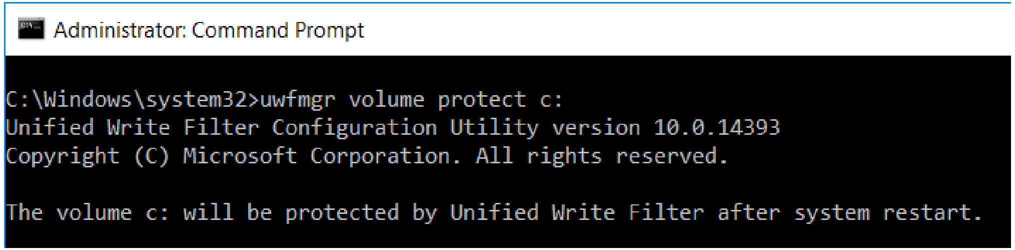
uwfmgr file add-exclusion c:\test



```
C:\Windows\system32>uwfmgr filter enable
Unified Write Filter Configuration Utility version 10.0.14393
Copyright (C) Microsoft Corporation. All rights reserved.

Unified Write Filter will be enabled after system restart.
```

Change overlay type from RAM to DISK

uwfmgr overlay set-type disk

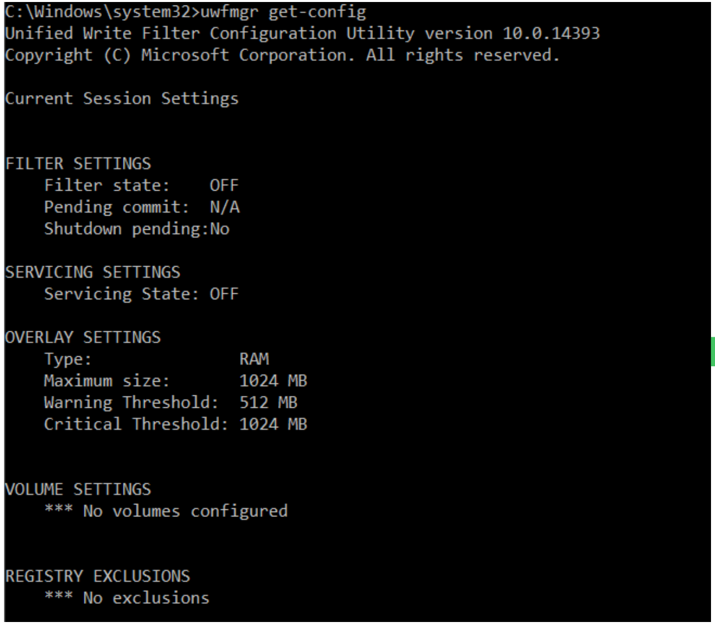


```
C:\Windows\system32>uwfmgr volume protect c:
Unified Write Filter Configuration Utility version 10.0.14393
Copyright (C) Microsoft Corporation. All rights reserved.

The volume c: will be protected by Unified Write Filter after system restart.
```

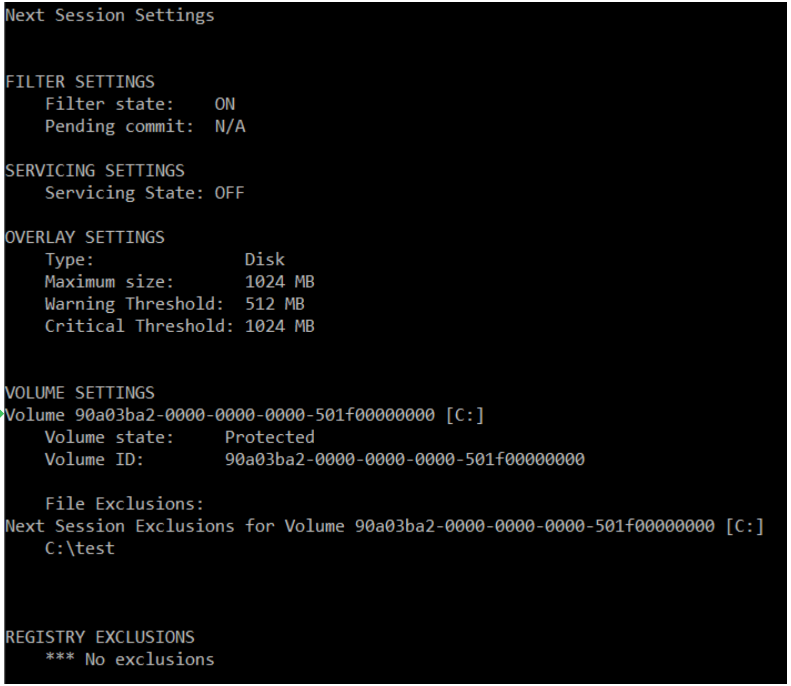
DEMO: Unified Write Filter

See current configuration and changes after reboot.

uwfmgr get-config



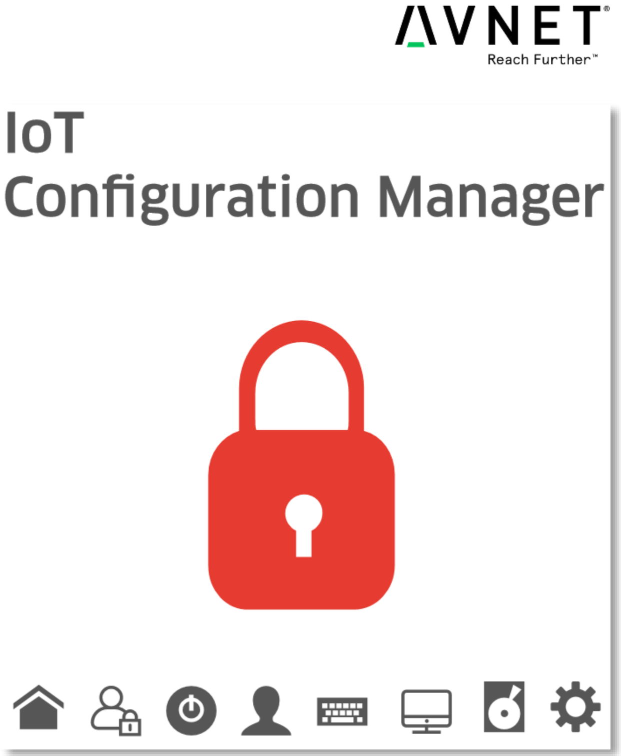
```
C:\Windows\system32>uwfmgr get-config
Unified Write Filter Configuration Utility version 10.0.14393
Copyright (C) Microsoft Corporation. All rights reserved.

Current Session Settings


FILTER SETTINGS
    Filter state:     OFF
    Pending commit:   N/A
    Shutdown pending:No

SERVICING SETTINGS
    Servicing State: OFF

OVERLAY SETTINGS
    Type:               RAM
    Maximum size:       1024 MB
    Warning Threshold:  512 MB
    Critical Threshold: 1024 MB


VOLUME SETTINGS
    *** No volumes configured


REGISTRY EXCLUSIONS
    *** No exclusions
```

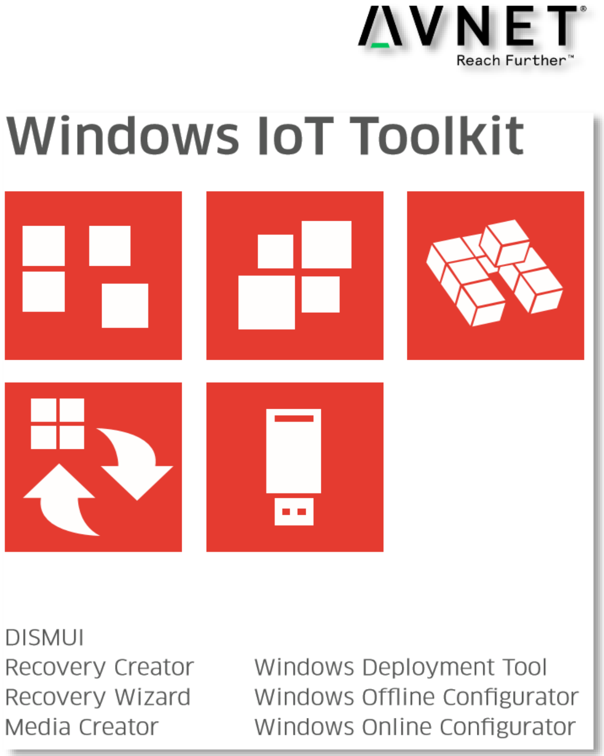


```
Next Session Settings


FILTER SETTINGS
    Filter state:     ON
    Pending commit:   N/A

SERVICING SETTINGS
    Servicing State: OFF

OVERLAY SETTINGS
    Type:               Disk
    Maximum size:       1024 MB
    Warning Threshold:  512 MB
    Critical Threshold: 1024 MB


VOLUME SETTINGS
Volume 90a03ba2-0000-0000-0000-501f00000000 [C:]
    Volume state:      Protected
    Volume ID:         90a03ba2-0000-0000-0000-501f00000000

    File Exclusions:
Next Session Exclusions for Volume 90a03ba2-0000-0000-0000-501f00000000 [C:]
    C:\test



REGISTRY EXCLUSIONS
    *** No exclusions
```

Avnet IoT Toolkits

Different Microsoft Windows IoT Toolkits from AVNET





DISMUI
Recovery Creator
Recovery Wizard
Media Creator

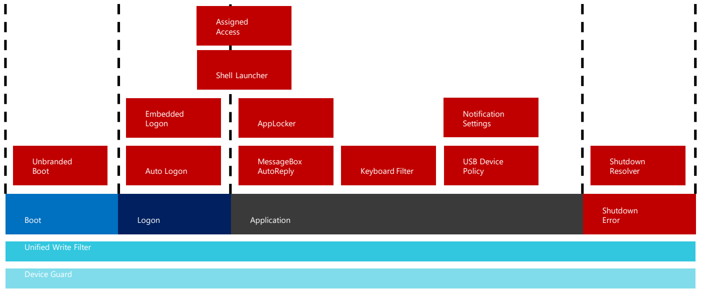
Windows Deployment Tool
Windows Offline Configurator
Windows Online Configurator

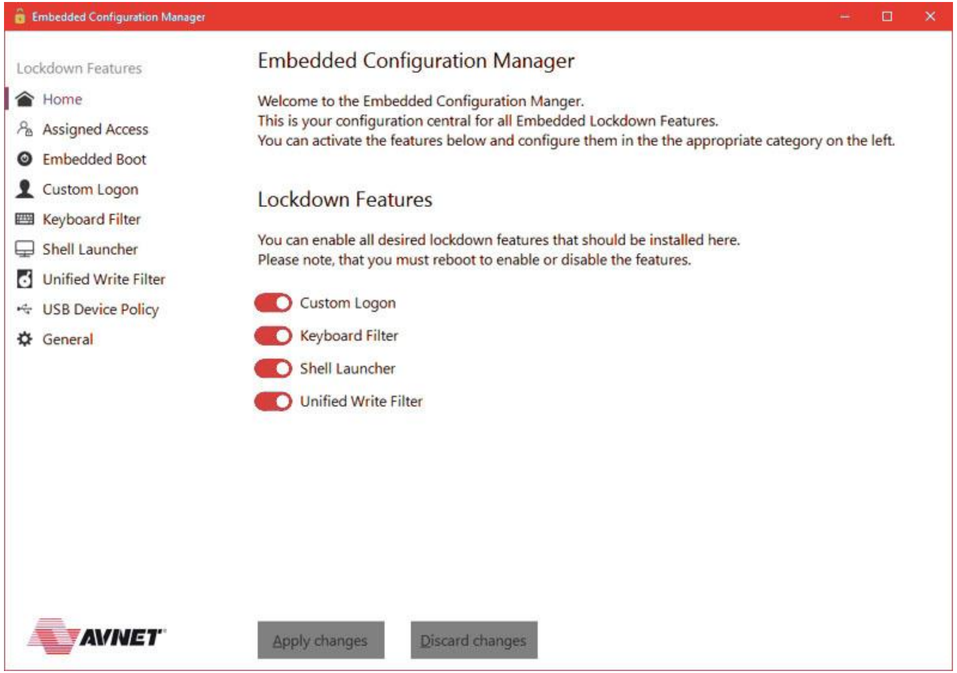
AVNET Windows IoT Configuration Manager

- Easy-to-use configuration center for all Lockdown Features

- Works with features from Windows 8.1 and later

- Easy activation of features





Embedded Configuration Manager

Welcome to the Embedded Configuration Manger.
This is your configuration central for all Embedded Lockdown Features.
You can activate the features below and configure them in the the appropriate category on the left.

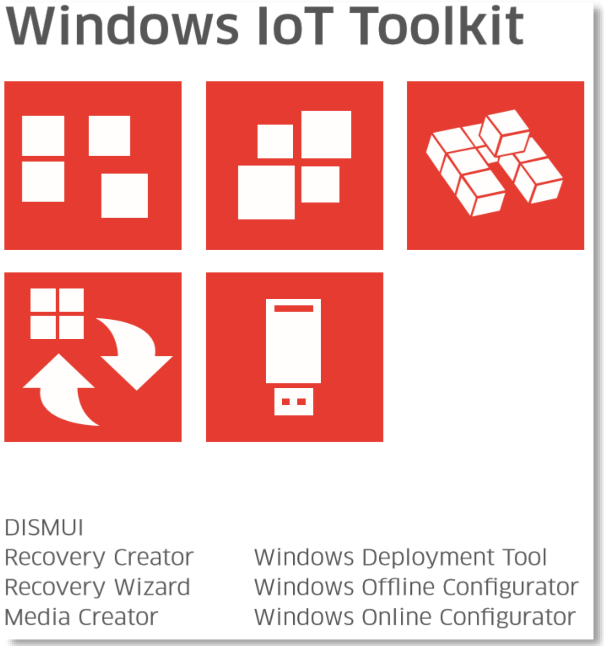
Lockdown Features

You can enable all desired lockdown features that should be installed here.
Please note, that you must reboot to enable or disable the features.

- ● Custom Logon
- ● Keyboard Filter
- ● Shell Launcher
- ● Unified Write Filter

AVNET Windows IoT Toolkit Suite

– DISMUI
– Recovery Creator
– Recovery Wizard
– Media Creator
– Windows Deployment Tool
– Windows Offline Configurator
– Windows Online Configurator



Windows IoT Toolkit

DISMUI
Recovery Creator
Recovery Wizard
Media Creator

Windows Deployment Tool
Windows Offline Configurator
Windows Online Configurator

AVNET Windows IoT Toolkit Suite: Benefits

- High Cost Savings For Small, Medium & Big Businesses
- One Tool For Every Step In The Development Cycle
- No Deep Technical Knowledge Needed
- Familiar User Interfaces
- Enormous Time Savings

Q & A

Thank you!