

OS Enhancement Utility User Manual

V1.3

OS Enhancement Utility User Manual

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Foreword

In Windows 10 IoT Enterprise, Microsoft provides many useful and helpful feature for users, however, it's not intuitive to use these features. Therefore, Advantech designs OS Enhancement Utility for users to access these features more quickly and easily.

Requirements

- I. Windows 10/11 IoT Enterprise
- II. Corresponding to OS Enhancement Utility v1.3
- III. The user account must have administrator privileges
- IV. Before starting to experience this tool, please fill-in user information start to use this tool.

Welcome to use OS Enhancement Utility

User Information

Company Name

Contact Name

Contact Person Email

Country / Region

Please describe the Application of your product

Submit

Click 'Submit' means accept this Utility to send the above information to Advantech as an user scenario statistic purpose.

Limitation

After sysprep, the setup of below items would be removed:

Section

2.2 - Notification Settings

2.4 - Windows Settings: Hibernate

2.5.2 - No Action Center: If the user account changes after sysprep, then this setting won't be kept.

2.7 - Device Control

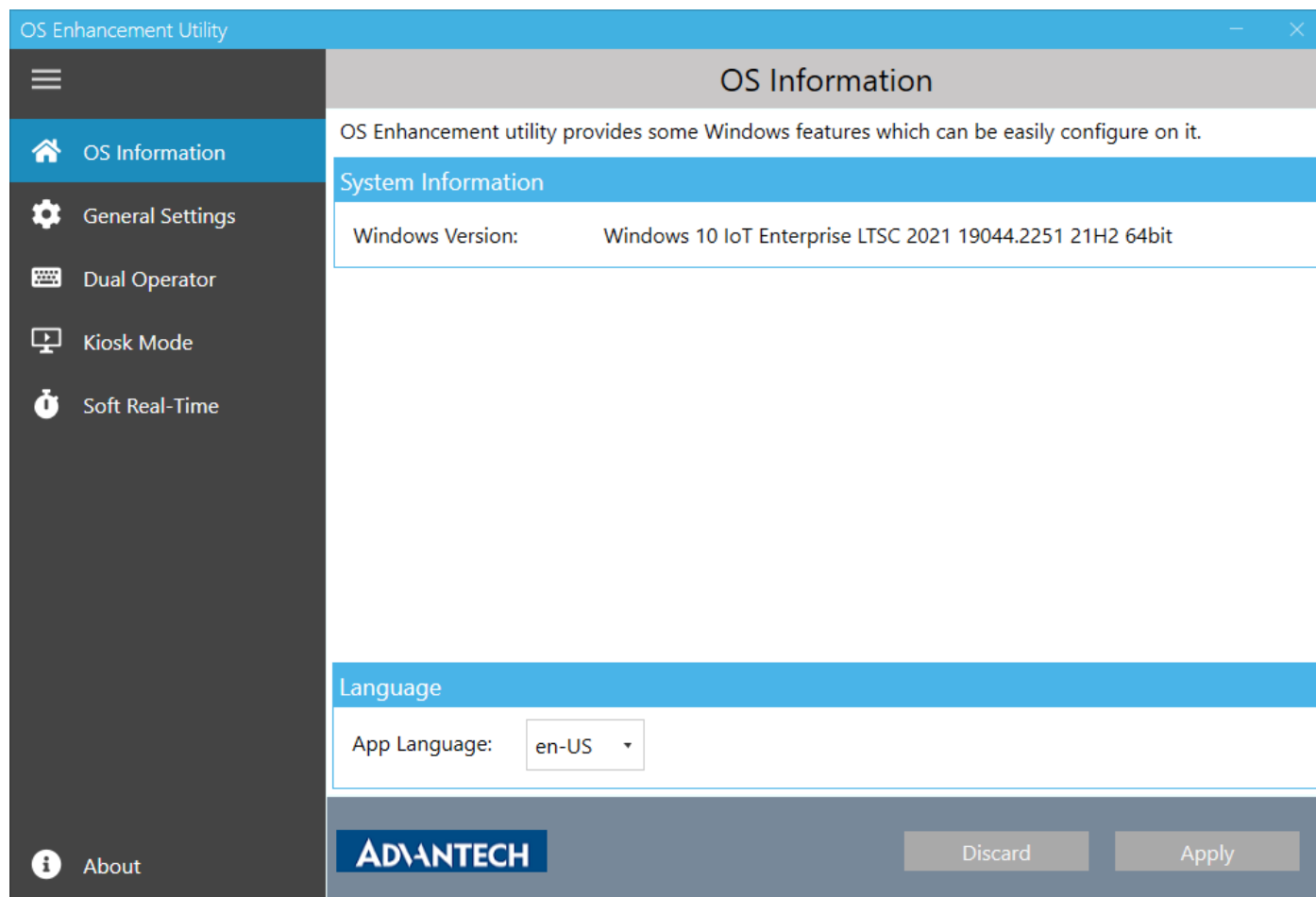
3 - Dual Operator

4 - Kiosk Mode

5 - Soft Real-Time

Introduction

1. OS Information



1.1 System Information

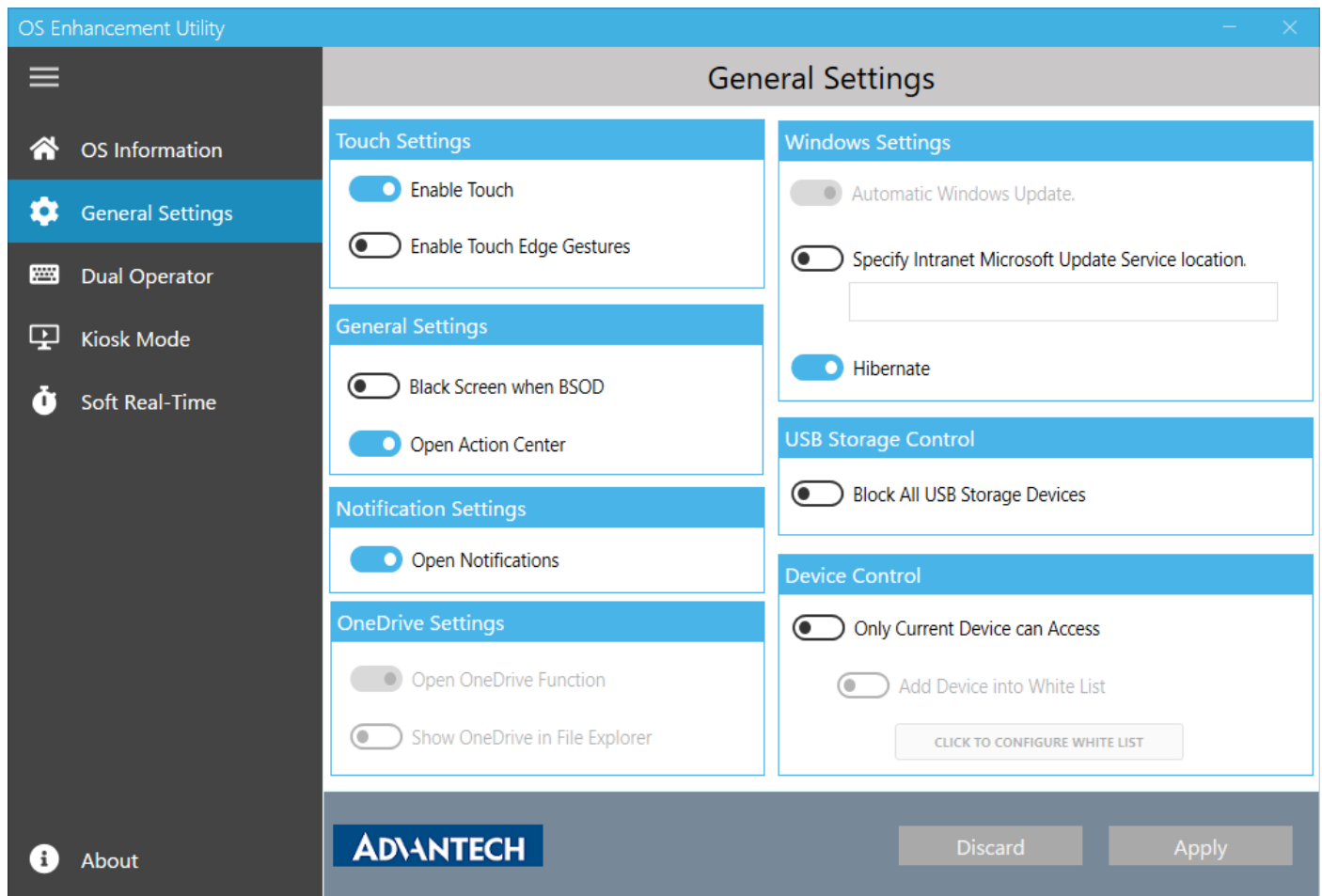
It shows Windows version and build numbers of your device. OS Enhancement Utility only supports build version later than 14393(RTM).

1.2 Language

OS Enhancement Utility is multilingual, you could choose the desired language and restart the utility to see it's changed to the selected language.

*** Note:** OS Enhancement Utility is currently available in English, Traditional Chinese, Simplified Chinese, Japanese and Korean language. Your language is not yet included? Please contact your local FAE to add your language.

2 General Settings



In General Settings, we include some Windows features which can be easily configured on the utility.

2.1 Touch Settings

Enable or disable Touch function (only support capacitance touch device)

Enable or disable Touch Edge Gestures

2.2 Notification Settings

Enable or Disable Notifications

*** Note:** After system prepare, the setup of notification setting would be removed.

2.3 OneDrive Settings

Enable or disable OneDrive Function

Show or hide OneDrive in file explorer

*** Note:** Utility will auto detect whether your device install OneDrive or not.

2.4 Windows Settings

2.4.1 Win10 IoT Ent 2016 LTSB:

- I. Default setting: enable Windows update or ;
- II. Disable Automatic Windows Update (quality and security update), or;
- III. Specify an intranet URL as a new location for Windows update (quality and security update).

*** Note:** Disable “Automatic Windows Update” would block operating system from adding Windows KB into it.

2.4.2 Win10 IoT Ent 2019/2021 LTSC:

- I. Default setting: enable Windows update or ;
- II. Specify an intranet URL as a new location for Windows update (quality and security update).

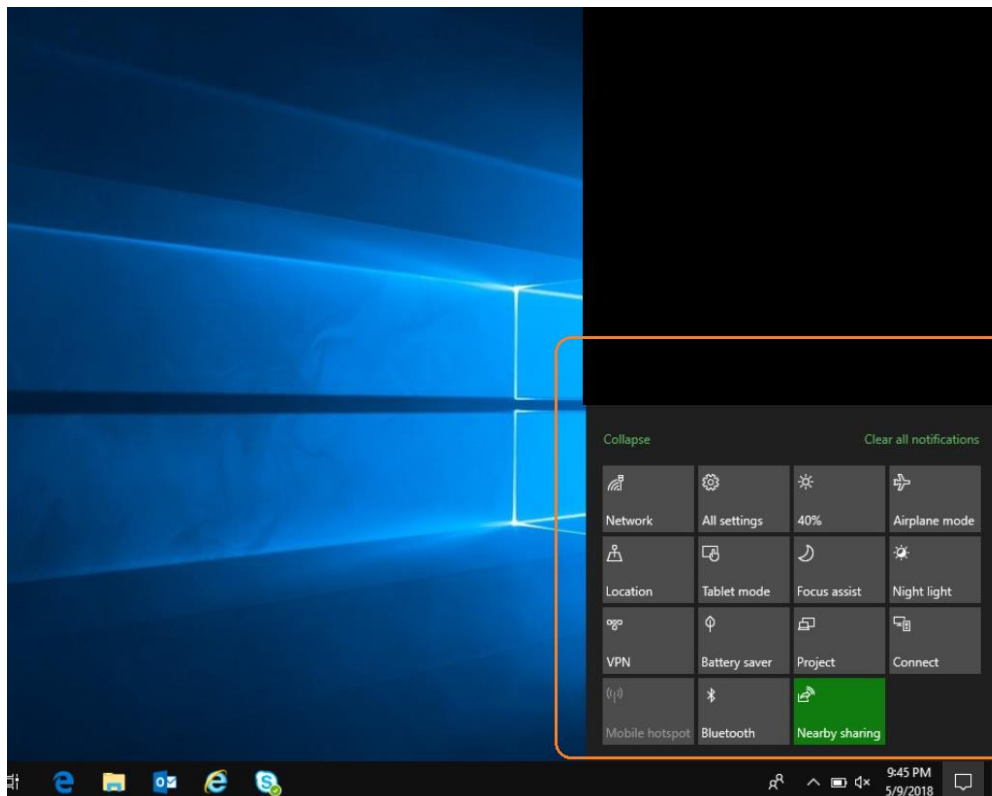
2.4.3 Enable or Disable Hibernate function

*** Note:** After sysprep, the setup of hibernate would be removed.

2.5 General Settings

2.5.1 Black screen when BSOD: After enable this feature, screen will become black when system occurs BSOD instead of blue screen.

2.5.2 Action center: Disable this feature to hide action center.



2.6 USB Storage Control

Access or Block All USB Storage Devices

2.7 Device Control

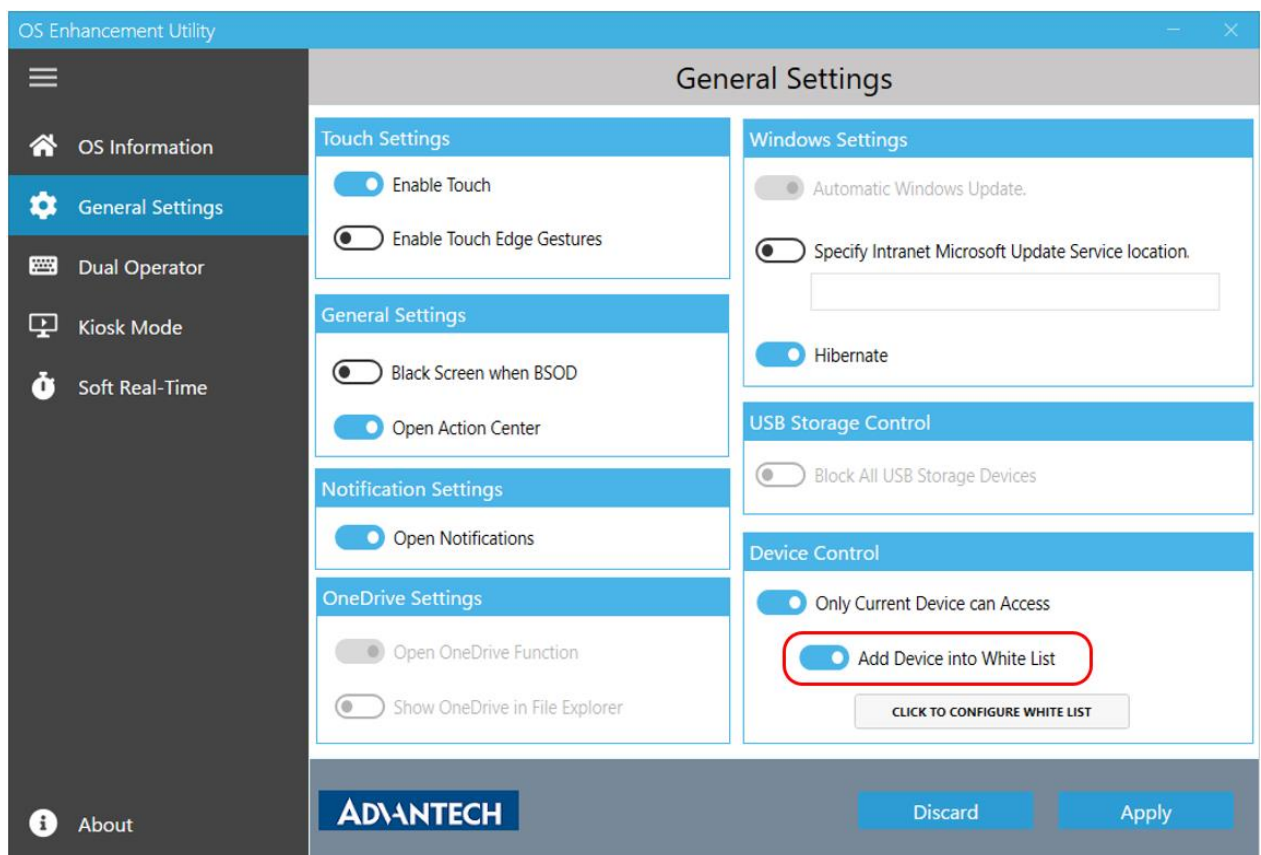
2.7.1 Only current device can access:

This feature is controlled based on device. If enable this feature, only the device that had working/existing in this computer could work, no new device could work further. For example, if a mouse-A already exist/working in this computer, after enable this feature, no other mouse or device could work in this computer.

2.7.2 Add device into white list:

This feature is controlled based on device ID. If enable this feature, you may decide which device ID you would like to add into white list and work on this computer. For example, if you want to add keyboard into white list, go to “Click to Configure White List” button and choose the device ID of keyboard, check it (the state will become “Allowed”), and click “Confirm” and “Apply” to add into white list.


Please note that a device may need more than one ID to be added into white list to make it workable successfully. For example, if you want to add mouse device into white list as a new device, besides adding mouse ID into list, you also need to add HID into white list to make mouse ID effective.



×

ID for White List

CLASS ID	STATE	CHECK
Battery Devices	Blocked	<input type="checkbox"/>
Biometric Device	Blocked	<input type="checkbox"/>
Bluetooth Devices	Blocked	<input type="checkbox"/>
Camera Device	Blocked	<input type="checkbox"/>
CD-ROM Drives	Blocked	<input type="checkbox"/>
Disk Drives	Blocked	<input type="checkbox"/>
Display Adapters	Blocked	<input type="checkbox"/>
Extension INF	Blocked	<input type="checkbox"/>
Floppy Disk Controllers	Blocked	<input type="checkbox"/>
Floppy Disk Drives	Blocked	<input type="checkbox"/>
Hard Disk Controllers	Blocked	<input type="checkbox"/>
Human Interface Devices (HID)	Blocked	<input type="checkbox"/>
IEEE 1284.1 Devices	Blocked	<input type="checkbox"/>



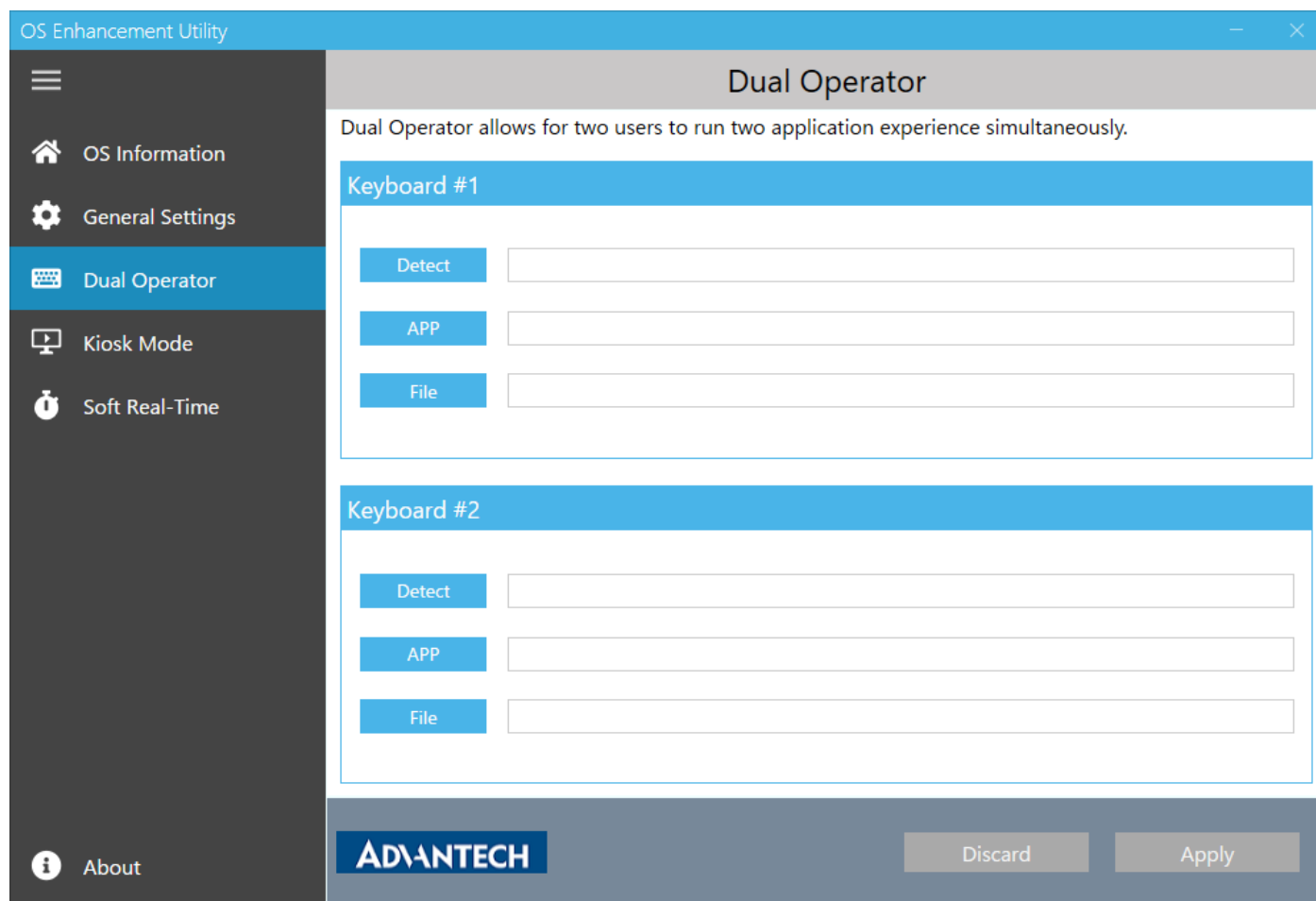
Adding a device into white list could need more than 1 IDs.
if add mouse into white list, need to add HID and mouse ID into list.

Confirm

Please visit here to get more information about class ID: <https://reurl.cc/9ZnpaO>

***Note:** “USB Storage Control” and “Device Control” cannot work at the same time. Please only choose one option to do the configuration.

3 Dual Operator



In Dual Operator, we let two users run two applications with individual keyboard.

3.1 Keyboard #1 Setting

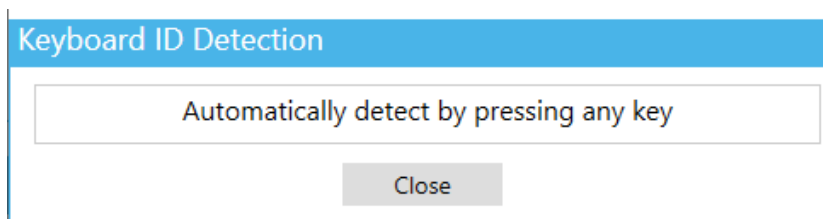
3.1.1 Detect:

Configure Keyboard ID automatically (refer to Fig3.1-1):

The text “Automatically detect pressing any key” receives the key event automatically when pressing any key in this position of text.

(Required)

(Fig3.1-1)



3.1.2 APP:

Select application (exe file location) combine with keyboard.
(Required)

3.1.3 File:

Select specific file executed by application (refer to 3.1.2).
(Optional)

3.2 Keyboard #2 Setting

(Refer to 3.1)

3.3 Apply

Save the current setting and execute.

(Keyboard #1 and Keyboard #2 must be set completely)



3.4 Limitation

After the system restarts, the function of Dual Operator doesn't work automatically.

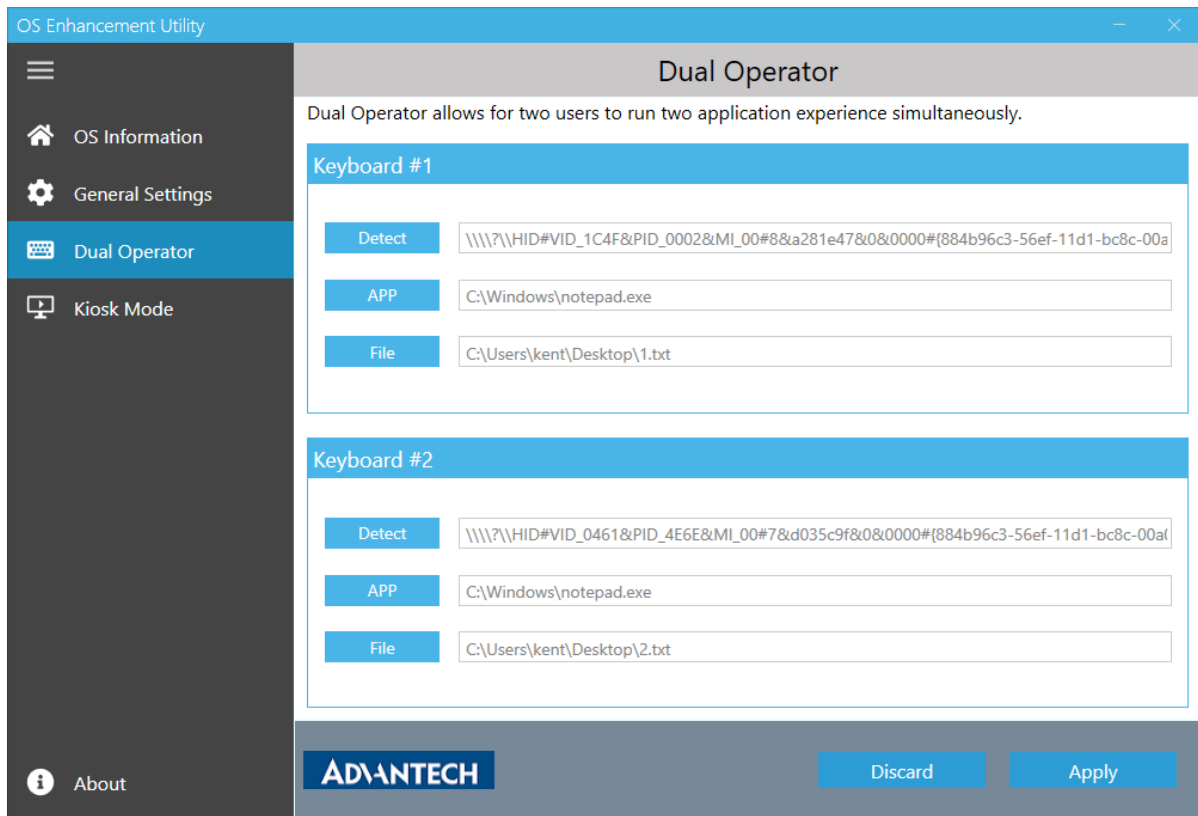
If the function of Dual Operator needs to work correctly after system restarts, please refer to 3.1-3.3.

3.5 Example

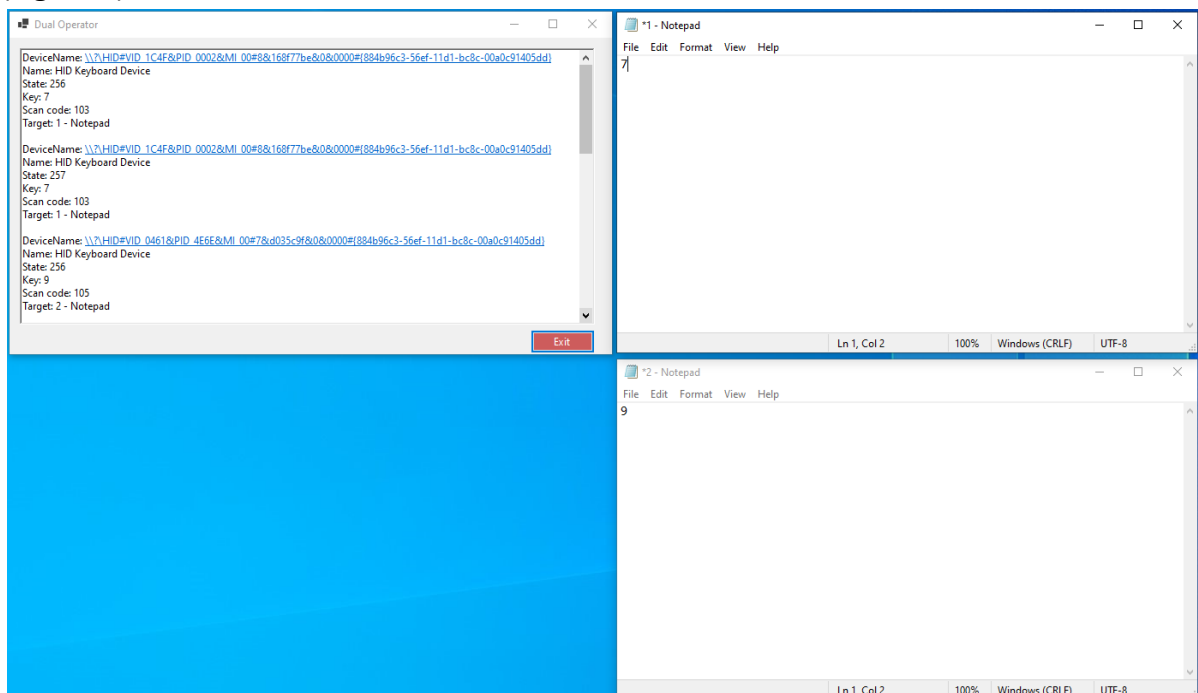
Fig3.5-1: Use two applications (notepad.exe) to combine individual keyboards.

Fig3.5-2: Display the result.

(Fig3.5-1)



(Fig3.5-2)



4 Kiosk Mode

The screenshot shows the 'OS Enhancement Utility' window with the 'Kiosk Mode' tab selected. The left sidebar contains navigation options: OS Information, General Settings, Dual Operator, Kiosk Mode (selected), Soft Real-Time, and About. The main content area is titled 'Kiosk Mode' and contains the following sections:

- User ID:** A dropdown menu labeled 'Standard User:' with a downward arrow.
- Single Kiosk:** A section with a toggle switch labeled 'Edit'.
- Multi Kiosk:** A section with a toggle switch labeled 'Edit'.
- PPKG:** A text input field.

At the bottom of the window, there is an 'ADVANTECH' logo on the left and two buttons, 'Discard' and 'Apply', on the right.

4.1 Kiosk Mode Introduction

Kiosk mode is a common way to lock down a Windows device when that device is used for a specific task or used in a public setting.

4.2 User ID

Select local account.

(Select Single Kiosk or Multi Kiosk)

4.3 Single Kiosk

Select UWP application.

This close-up shows the 'Single Kiosk' section of the configuration window. It includes a toggle switch labeled 'Edit' which is currently turned on. To the right of the toggle is the label 'APP (UWP) :'. Further right is a dropdown menu showing the selected application: 'Microsoft.Windows.OOBENetworkCaptivePortal_cw5n1h2'.

4.4 Multi Kiosk

Select more UWP applications or Non-UWP applications to the list.

The screenshot shows a window titled "Multi Kiosk" with a blue header. Below the header, there is a toggle switch for "Edit" (which is turned on) and a grey "Add" button. Below this is a table with the following columns: Index, UWP, Non-UWP, Icon, Execute, Edit, and Remove. The table contains one row with the index "1" and the application name "Microsoft.BingWeather_8\". To the right of the application name, there is a checkbox, an edit icon (pencil), and a remove icon (trash).

Index	UWP	Non-UWP	Icon	Execute	Edit	Remove
1	Microsoft.BingWeather_8\			<input type="checkbox"/>		

4.4.1 Add:

Display a dialog for selecting UWP or Non-UWP application information to the list.

4.4.2 UWP / Non-UWP application:

Select UWP application (AUMID).

The screenshot shows a "Setting" dialog box. It has two radio buttons: "UWP" (which is selected) and "Non-UWP". Next to the "UWP" radio button is a dropdown menu showing "Microsoft.Windows.OOBENet". Below the radio buttons are two buttons: "EXE" and "Icon". At the bottom of the dialog are "Save" and "Cancel" buttons.

Select "Save" button: Add UWP application to the list.

<Note: Cant' select the same UWP application if you already selected it into the list>

Select Non-UWP application:

1. Exe: *.exe file location
2. Icon: *.lnk file location

The screenshot shows a 'Setting' dialog box with a blue header. It has two radio buttons: 'UWP' (unselected) and 'Non-UWP' (selected). Below the radio buttons are two rows of input fields. The first row is labeled 'EXE' and contains the text 'C:\Windows\explorer.exe'. The second row is labeled 'Icon' and contains the text '\\Programs\Accessories\Internet Explorer.lnk'. At the bottom of the dialog are two buttons: 'Save' and 'Cancel'.

Select "Save" button: Add Non-UWP application and icon information to the list.

<Note: Can't select the same Non-UWP application if you already selected it into the list>

4.4.3 Applications list:

Index: Display the number of applications.

UWP: Display the AUMID of UWP application.

Non-UWP: Display the location of Non-UWP application.

Icon: Display the location of Non-UWP application link.

Execute: Select one application to run automatically when system boot up. You could also leave all Execute checkbox unchecked according to your design.

Edit: Edit this item.

Remove: Remove this item.

4.5 Apply



If you have more than one user in your system, this notification window will pop up

The screenshot shows a 'Notice' dialog box with a blue header. The main text inside the dialog is 'Do you want to configure another user ?'. At the bottom of the dialog are two buttons: 'Yes' and 'No'.

4.5.1 Yes:

1. Save the current user's setting.
2. Start a new setting for another user.

4.5.2 No:

1. Save the current user's setting.
2. Export a ppkg file and install ppkg to current system.
3. Make sure the user's status is **Sign-out**.

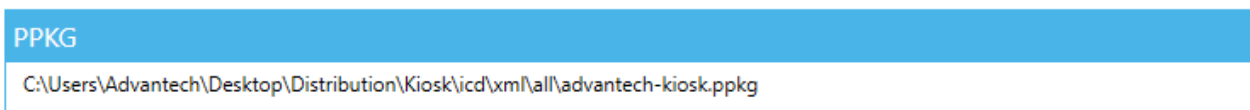
4.6 Discard

Delete setting data according to the current user.



4.7 PPKG

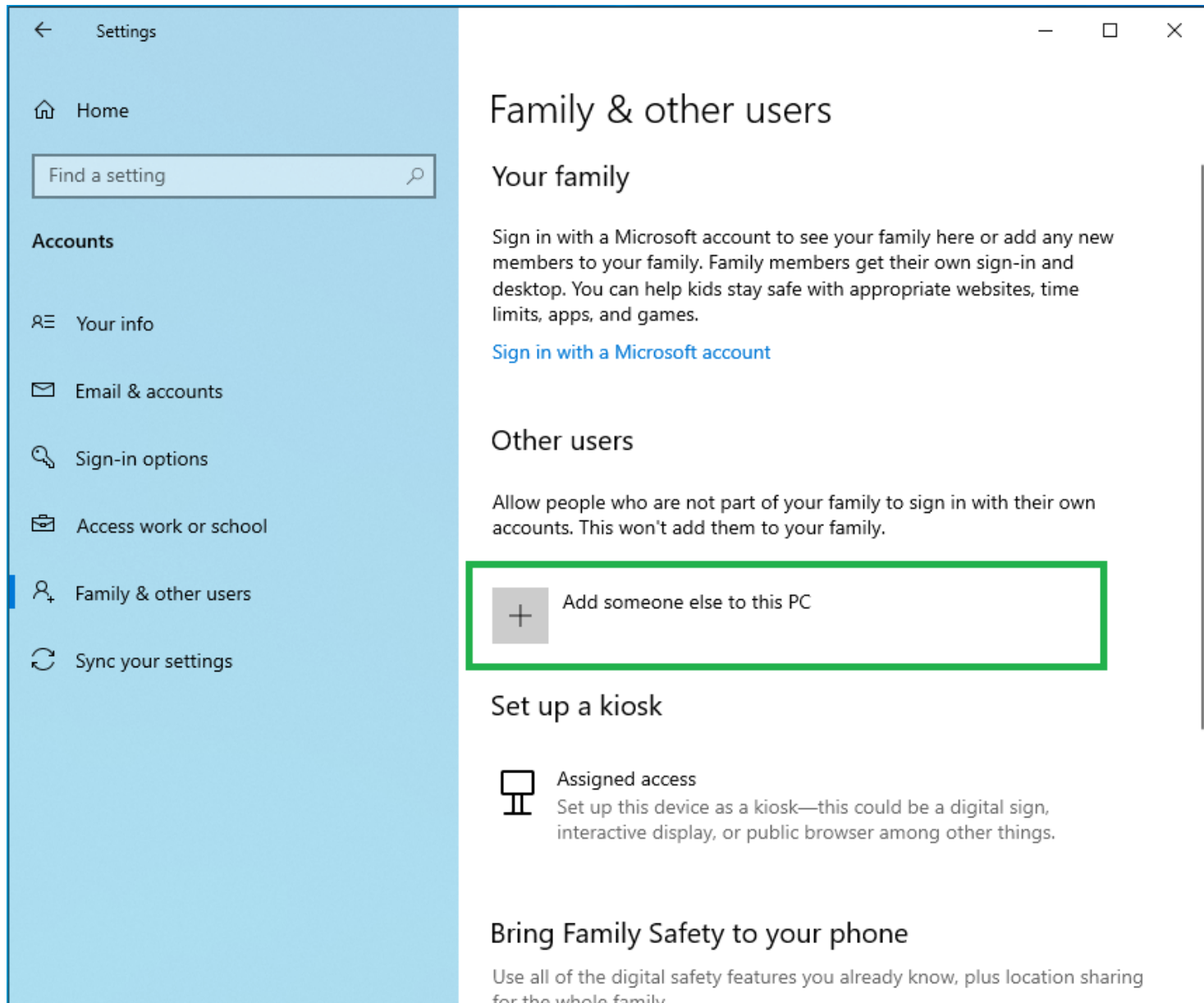
Display the location of ppkg exported.



4.8 Local user: Add and Configure

The following figures are methods about creating a new account in windows for Kiosk Mode.

4.8.1 Add a new account:



4.8.2 Configure account's type:

Family & other users

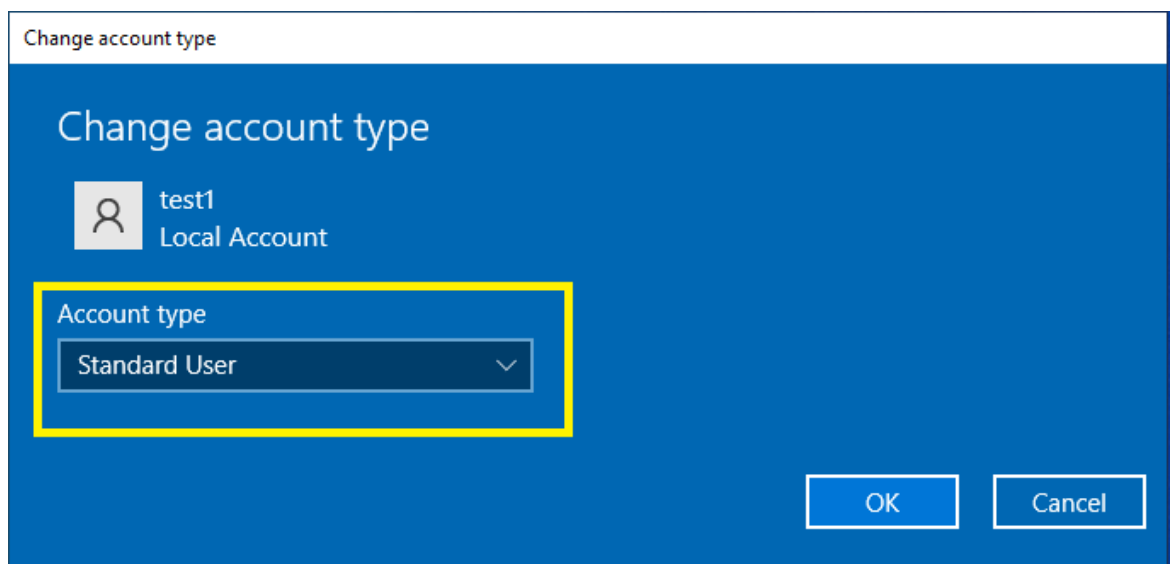
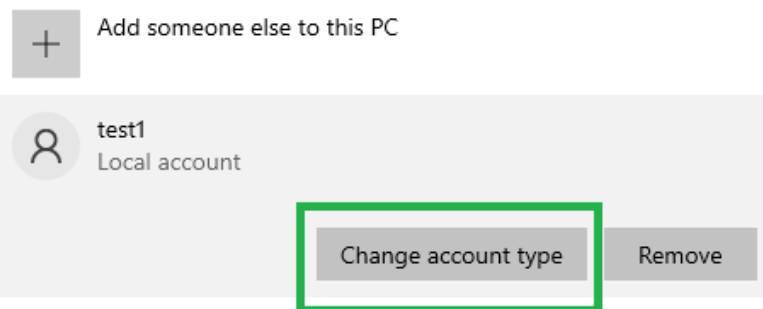
Your family

Sign in with a Microsoft account to see your family here or add any new members to your family. Family members get their own sign-in and desktop. You can help kids stay safe with appropriate websites, time limits, apps, and games.

[Sign in with a Microsoft account](#)

Other users

Allow people who are not part of your family to sign in with their own accounts. This won't add them to your family.



5 Soft Real-Time

OS Enhancement Utility

Soft Real-Time

- OS Information
- General Settings
- Dual Operator
- Kiosk Mode
- Soft Real-Time**
- About

Settings

☐ Enable Soft Real-Time [Developing a Soft Real-Time Application \(Microsoft\)](#)

Soft Real-Time CPU Core amount: Set Environment

Benchmark test cycles: Benchmark Test

Benchmark Test Result

Unit : ms	Disable	Enable
Average	0	0
Median	0	0
Max	0	0
Min	0	0
Range	0	0
SD	0	0

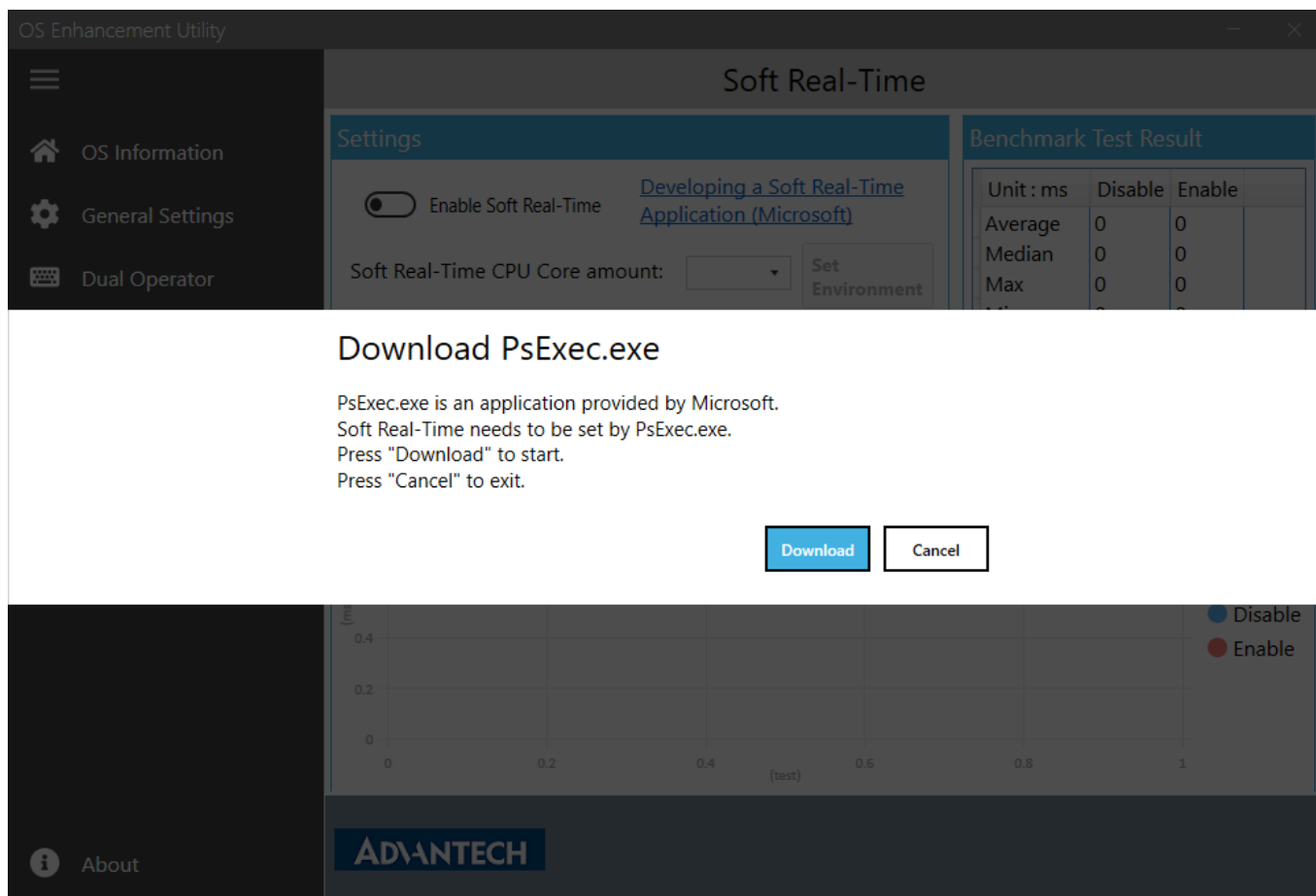
Benchmark Test Chart

5.1 Soft Real-Time Introduction

Soft Real-Time is a new feature provided with Windows 10 IoT Enterprise 21H2. OS Enhancement Utility gives an easy way to help you enable and test the Soft Real-Time feature.

5.2 Start up Soft Real-Time Page

When the first time selects the Soft Real-Time page, the "Download PsExec.exe" guide page will pop up. PsExec.exe is a tool provided by Microsoft that can be used to set Soft Real-Time. Please connect to the internet and press the "Download" button to auto-download.



If you don't have the internet on your current computer or the auto-download fail, you can start the manual download guide.

Auto Download Fail

Please connect to the internet and retry or start the manual download guide.



Please follow steps 1 and 2 to download the PsExec.exe manually.

You can press the "Copy Link" button and then paste the link to use in another computer with internet.

You can also download it from the below hyperlink:

<https://docs.microsoft.com/en-us/sysinternals/downloads/psexec>

Step 1

Press "Download Here" to open a web browser and navigate to the website.

Press "Download PsTools" on the web, and then you will download a compressed (zipped) folder name "PSTools".

After that, press "Next" to continue.

[Download Here](#)[Copy Link](#)[Next](#)

Please follow step 2 to put the PSTools.zip into OS Enhancement Utility install location and press "next." OS Enhancement Utility will auto-unzip the PSTools.zip and extract the PSTools.

Step 2

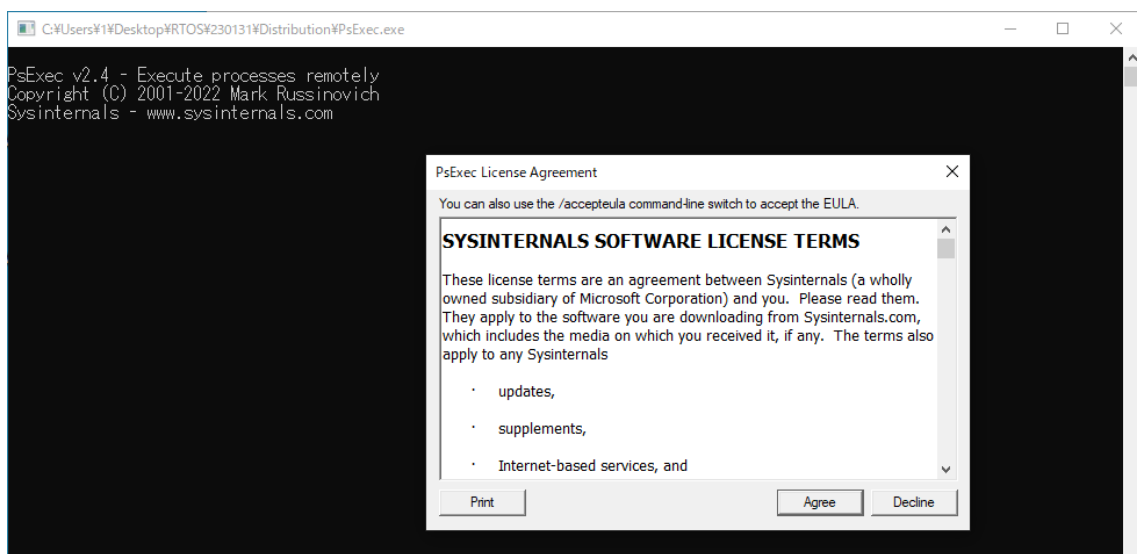
Please place PSTools.zip into OS Enhancement Utility install location.

Press "Open Folder Location" to open the folder in the file explorer, and then copy PSTools.zip into this folder.

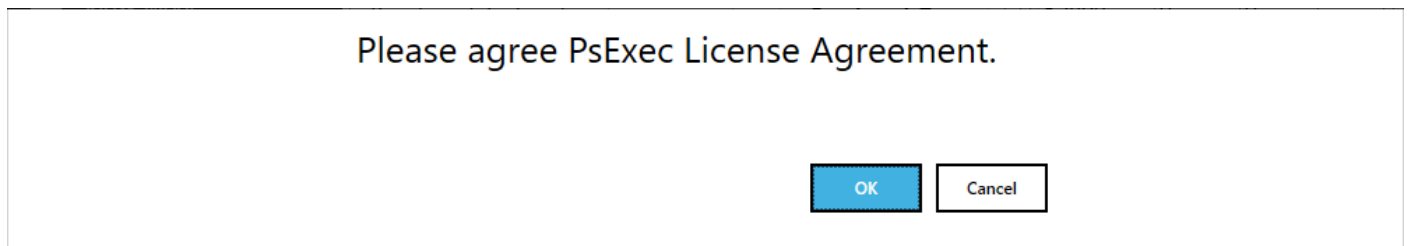
After that, press "Next" to continue.

[Open Folder Location](#)[Next](#)

After downloading PSTools, OS Enhancement Utility will start up the PsExec.exe. The license page of PsExec.exe will pop up. Please agree with the license to use PsExec.exe.

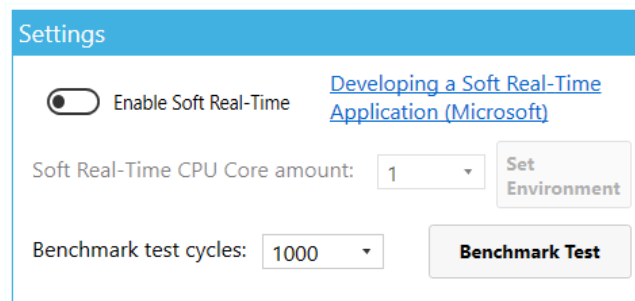


You can also press the "OK" button to execute PsExec.exe again if you close the license page accidentally.



5.3 Soft Real-Time Settings

The following subsection introduces "Settings."



5.3.1 Enable Soft Real-Time

We suggest you test the benchmark before enabling soft real-time to compare the difference.

!!Notice: Enabling soft real-time is a NOT reversible setting. This setting will force the restart of the machine.

The settings below will be set by OS Enhancement Utility simultaneously.

!!Notice: These settings must to be set and maintain, otherwise, the system will malfunction and require reimaging to recover.

1. Disable the current power plan's idle states.
2. Disable the following services:
 - a. SysMain (Superfetch)
 - b. DPS (Diagnostic Policy Service)
 - c. Audiosrv (Windows Audio)
 - d. wuauserv(Windows Update)
3. Disable Windows Update.
4. Configure network interface controller Receive Side Scaling (RSS), during the setting might cause an internet disconnect for a few seconds.

5.3.2 Developing a Soft Real-Time Application (Microsoft)

This hyperlink will take you to the Microsoft website and guide you on how to develop your own soft real-time application.

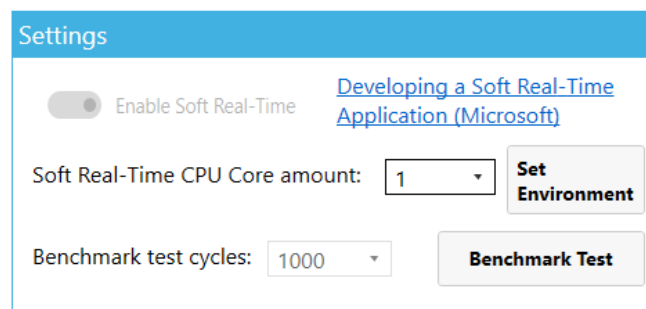
The hyperlink is as below:

<https://learn.microsoft.com/en-us/windows/iot/iot-enterprise/soft-real-time/soft-real-time-application>

5.3.3 Soft Real-Time CPU Core amount

After enabling the soft real-time, "Soft Real-Time CPU Core amount" can be set. This setting determines the current amount of soft real-time CPU core. It is set immediately after your selection.

!!Notice: This setting will force the restart of the machine.



Soft real-time CPU core maximum amount is CPU physical cores amount subtract 1. The core 0 will leave for system and non-real-time tasks. So physical two core CPU will only show one core at this setting. The soft real-time core amount setting will start with the highest core and go downwards. For example, when the "Soft Real-Time CPU Core amount" is set as 3 cores, at 4 core CPU will set cores 3, 2, and 1 to run as soft real-time and leave core 0.

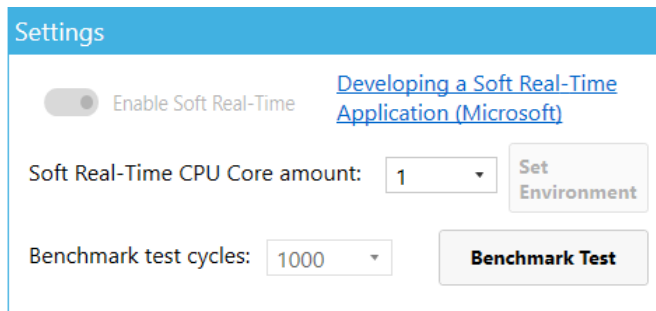
Only support one CPU.

Support from 2 to 64 physical cores.

5.3.4 Set Environment

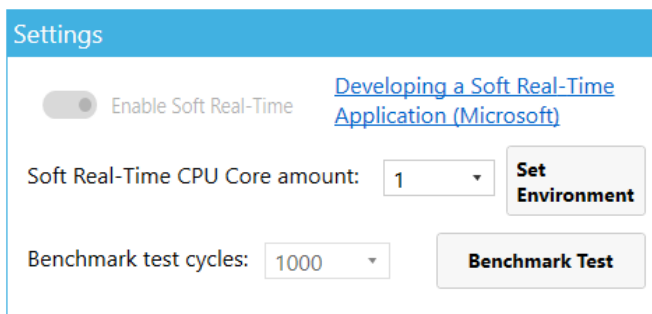
The "Set Environment" button is available when the soft real-time is enabled with the environment checks failing. Whenever this page loads with soft real-time enabled, OS Enhancement Utility scans whether the environment keeps. Some environment settings will be changed by Windows. If you are not using the related environment settings, please press the "Set Environment" button when available.

Environment scans pass:
No need to set.



The screenshot shows a 'Settings' window with a blue header. Below the header, there is a toggle switch for 'Enable Soft Real-Time' which is currently turned off. To the right of the toggle is a link: 'Developing a Soft Real-Time Application (Microsoft)'. Below this, there is a label 'Soft Real-Time CPU Core amount:' followed by a dropdown menu showing the value '1'. To the right of this dropdown is a button labeled 'Set Environment'. At the bottom, there is a label 'Benchmark test cycles:' followed by a dropdown menu showing the value '1000'. To the right of this dropdown is a button labeled 'Benchmark Test'.

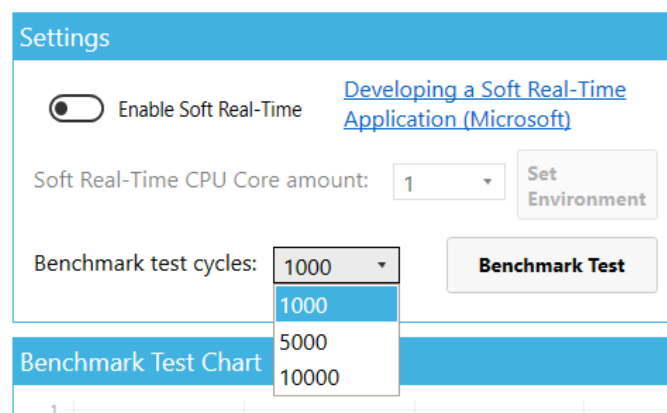
Environment scans fail:
Please press the “Set Environment” button to set the environment again.



This screenshot is identical to the one above, showing the 'Settings' window with the 'Enable Soft Real-Time' toggle off, 'Soft Real-Time CPU Core amount' set to 1, and 'Benchmark test cycles' set to 1000. The 'Set Environment' and 'Benchmark Test' buttons are visible.

5.3.5 Benchmark test cycles

Benchmark test cycles can set the testing time as 1000, 5000, or 10000. This effect the benchmark test running time and the result's reliability. The number means how many times the testing code will be run and create how many test results.



This screenshot shows the 'Settings' window with the 'Benchmark test cycles' dropdown menu open. The menu lists four options: '1000', '1000', '5000', and '10000'. The first '1000' option is highlighted in blue. Below the dropdown menu, there is a label 'Benchmark Test Chart' followed by a horizontal axis with a single tick mark labeled '1'.

This value will be fixed at the last time test cycles. If the benchmark has never been tested the current selection will be fixed.

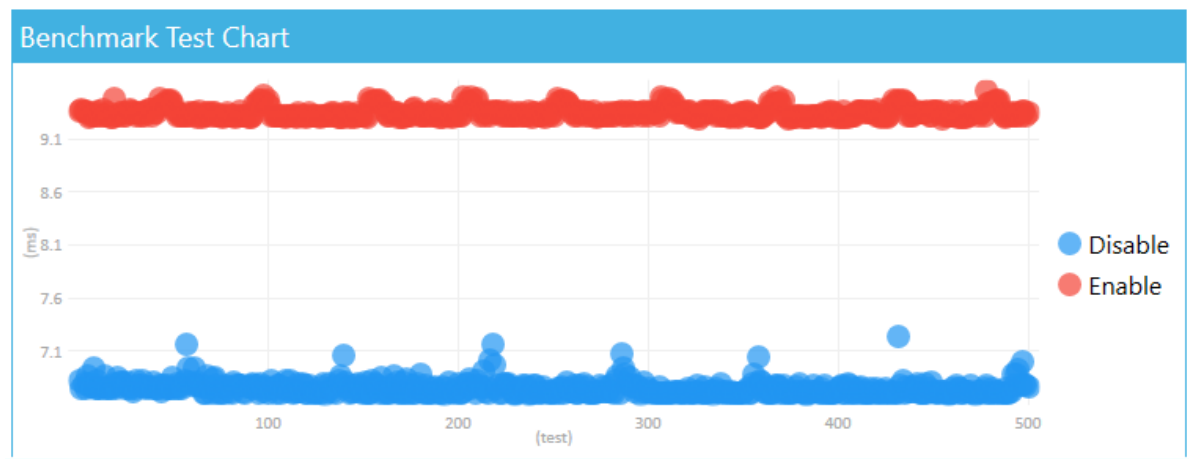
5.3.6 Benchmark Test

Benchmark test will use the I/O port 0x80 to test. Please make sure the I/O port 0x80 is not in use during the test. CPU will be full load during the benchmark test. OS Enhancement Utility might not respond, please wait for it or select "Wait for the program to respond." The Benchmark test relies on a Secured & Unified Smart Interface (SUSI) to run. SUSI is an application provided by Advantech, so please ensure that it is installed before running the OS Enhancement Utility.

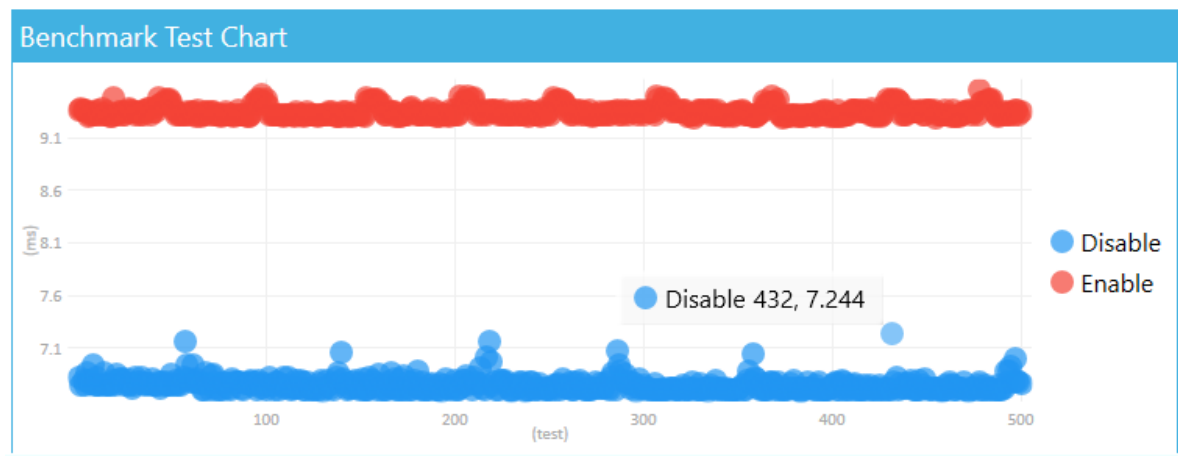
Benchmark testing time depends on the test cycles selected and CPU performance. Benchmark test will run the testing code and measure the running time.

5.4 Benchmark Test Chart

Not all test results will be shown in this chart. The benchmark test chart will pick the result's maximum and minimum 250 test points of Disable and Enable to show the trend of the result. The result points will be shown by the test order. The horizontal axis represents the test order. The vertical axis shows the running time in milliseconds.



You can put the cursors on the result point to show the value.



5.5 Benchmark Test Result

Benchmark test result shown in milliseconds. This result is calculated by all benchmark test cycles results.

Average is the arithmetic mean of the result.

Max is an abbreviation for maximum.

Min is an abbreviation for minimum.

Range is the maximum subtract minimum.

SD is an abbreviation for corrected sample standard deviation. Standard deviation is a measure of the amount of dispersion of results.

Benchmark Test Result			
Unit : ms	Disable	Enable	
Average	6.741	9.338	
Median	6.727	9.33	
Max	7.244	9.549	
Min	6.693	9.291	
Range	0.551	0.258	
SD	0.049	0.035	

Average, Median, Max, and Min at enabled might be longer than the disabled. This is reasonable. Soft real-time feature provides predictable and more stable performance but might not be faster. If the Range and SD at enabled are faster than disabled are in line with our expectations. The comparing result depends on the CPU, network interface, computer utilization, and other reason.

You can develop a soft real-time application that follows the Microsoft soft real-time development guide to test your task's performance.

Through the configuring on the utility, you can efficiently customize and build up your Windows 10 IoT Enterprise image. Should you have any suggestion, please feel free to feedback to us [Suggestion Link](#).

APPENDIX

Change History

Version	Change content	Status
V1.0	First version	Released
V1.1	Add Dual Operator & Kiosk Mode feature	Released
V1.2	Add Soft Real-Time	Released
V1.3	Support Windows 11 IoT Enterprise	Released