Microsoft

Windows 10
Touch and Pen Overview

Blue Lan
Software Engineer
Partner Enablement Team

Agenda

- Windows Touch Investment
- Windows 10 Requirements for Touch
- Inbox Apps that uses the Windows 10 DirectInk Platform
- Windows 10 Requirements for Pen
- Co-engineered Assistive Testing Jigs for Pen hardware
- Compatibility Program
- Resources for Touch and Pen

Windows 10 Touch Investment

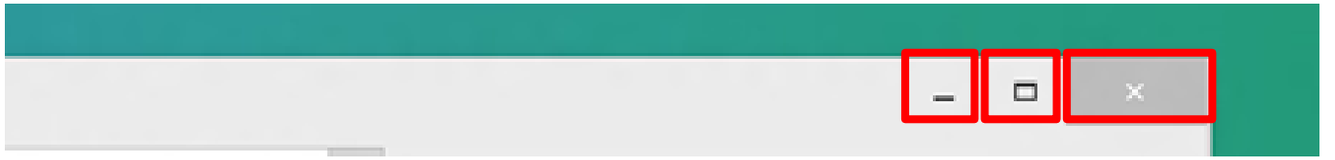
Touch Friendly Taskbar

Without Touch

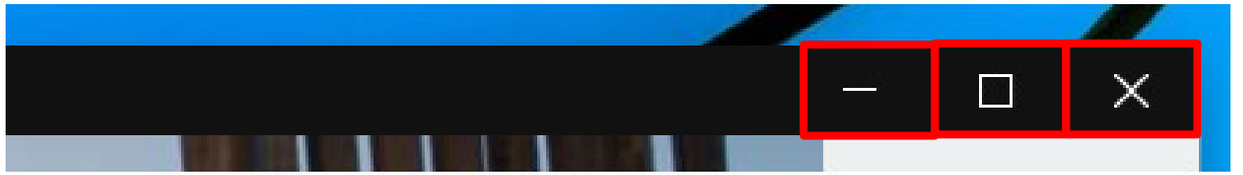
With Touch: More space between icons

Touch Friendly Controls

Windows 8



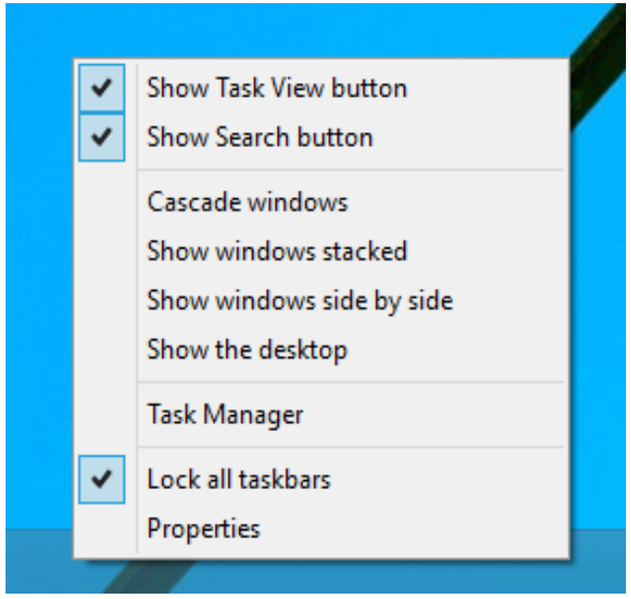
Windows 10



Touch Friendly Context Menu System

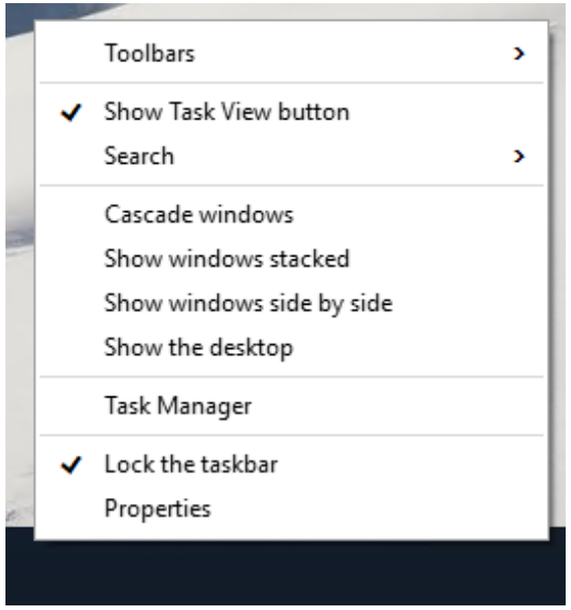
Windows 8

Mouse & Touch

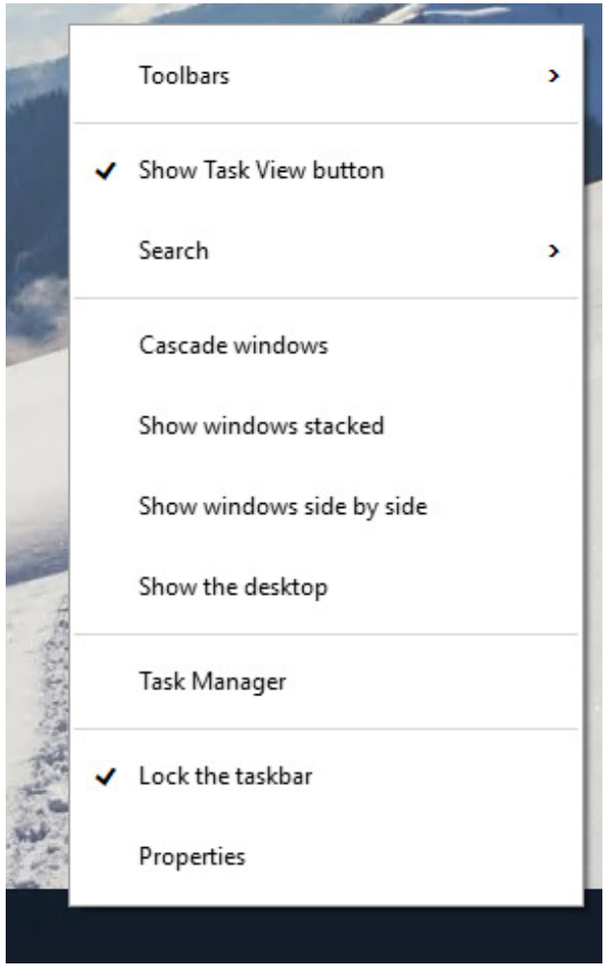


Windows 10

Mouse



Touch

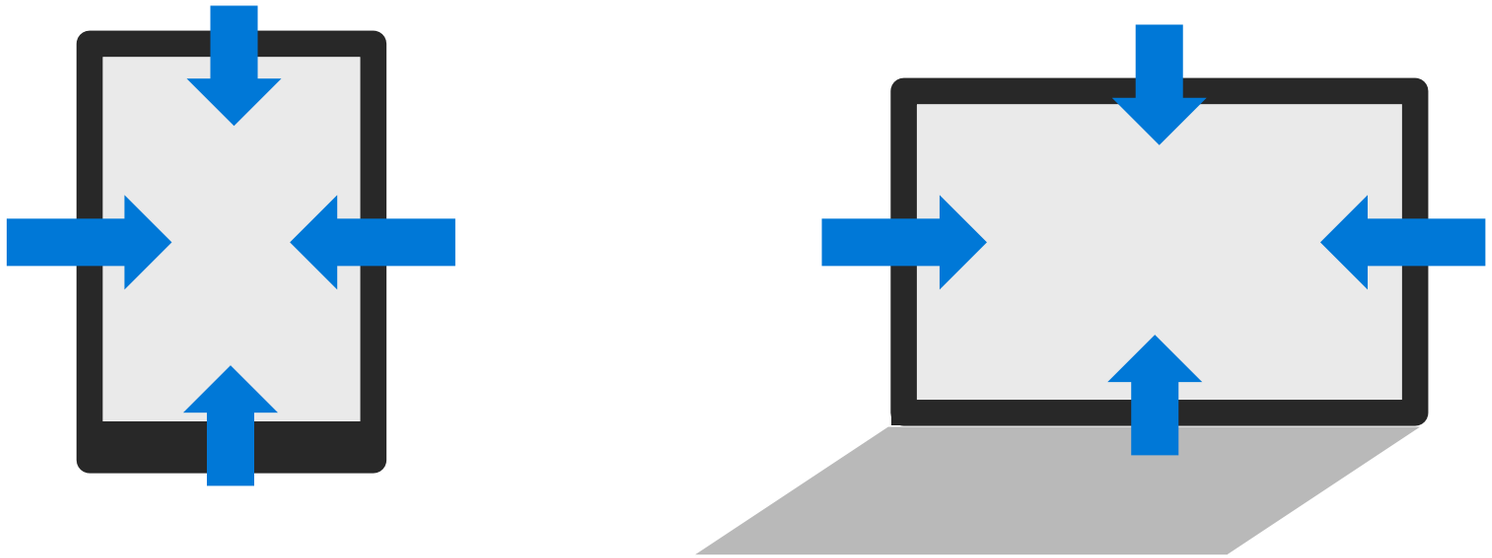


New Touch Swipe Gestures

Edge Swipe Gestures

We've relaxed requirements on how the digitizer should perform around screen edges to support a broader range of hardware!

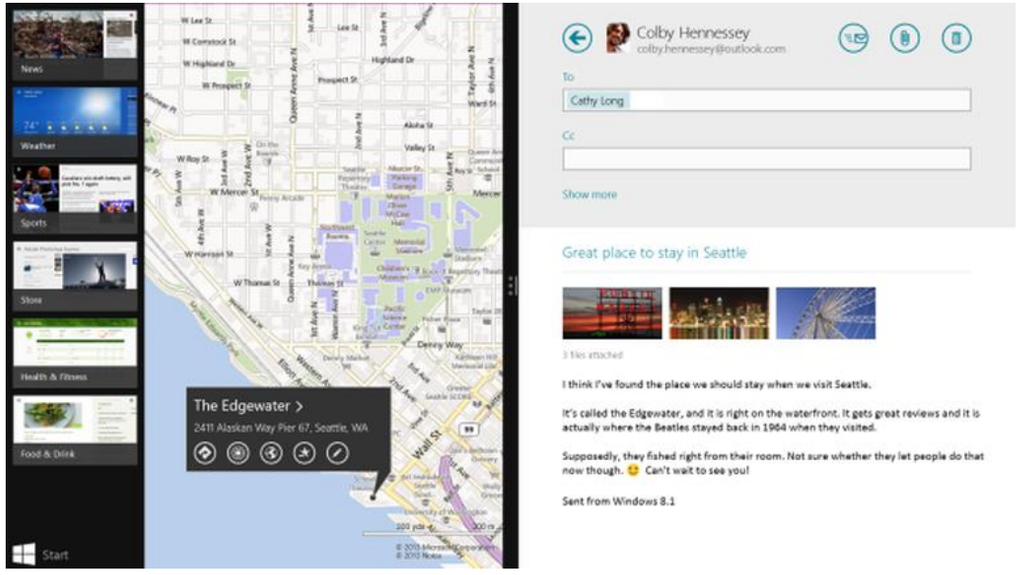
Edge gestures on all four sides of the screen provide quick access to important system UI in Windows 10.



Left Edge Swipe: Task View

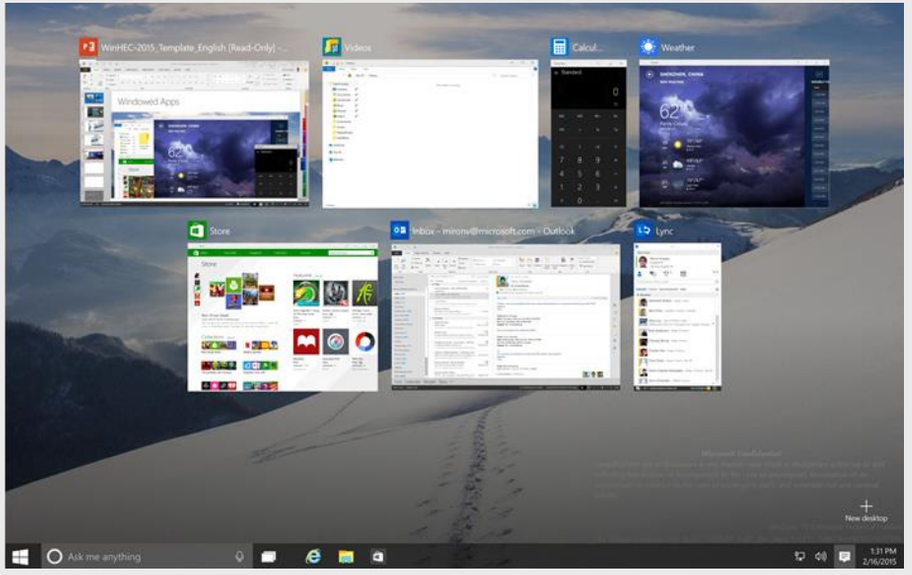
Windows 8.1

Bring out the last-used app or the list of most recently used apps (Switch List).



Windows 10

Bring up a grid of most recently used apps (Task View).



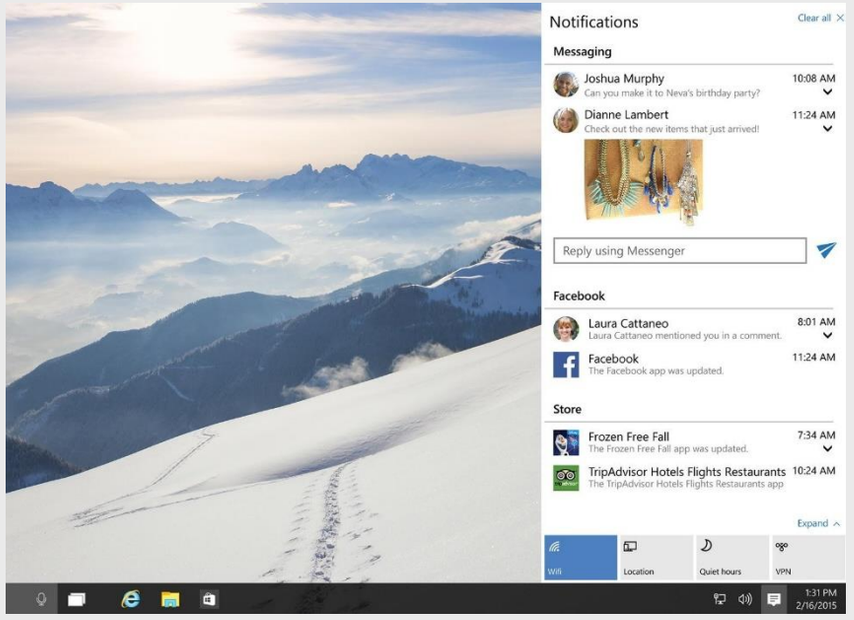
Right Edge Swipe: Action Center

Windows 8.1

Bring up the Charms Bar, which includes commonly used system settings.

Windows 10

Bring up Action Center, which shows notifications and commonly used system settings.

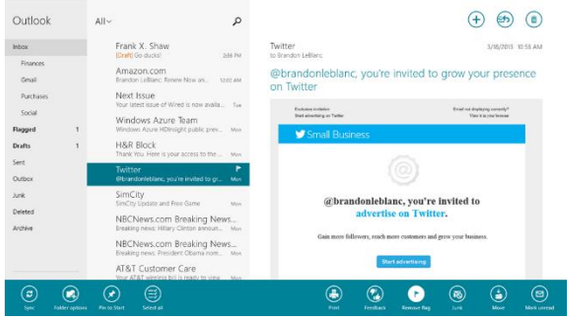


Top Edge Swipe: Multitasking

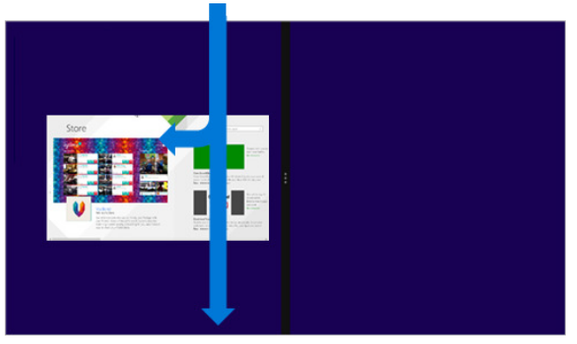
Windows 8.1

Bring up the app commands (short swipe) or snap/close an app (long swipe).

1



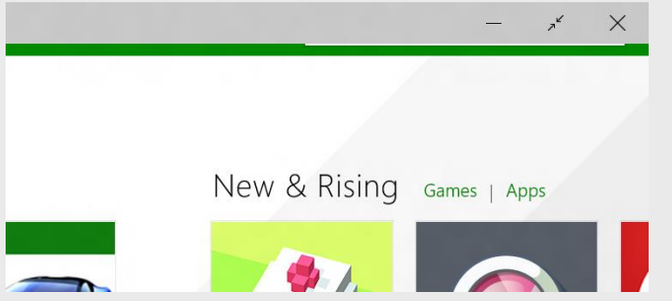
2



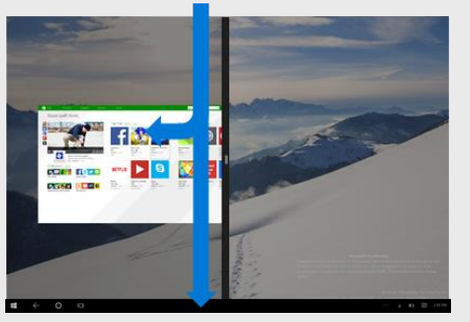
Windows 10

Bring up a hidden title bar (short swipe) or snap/close an app in Tablet Mode (long swipe).

1



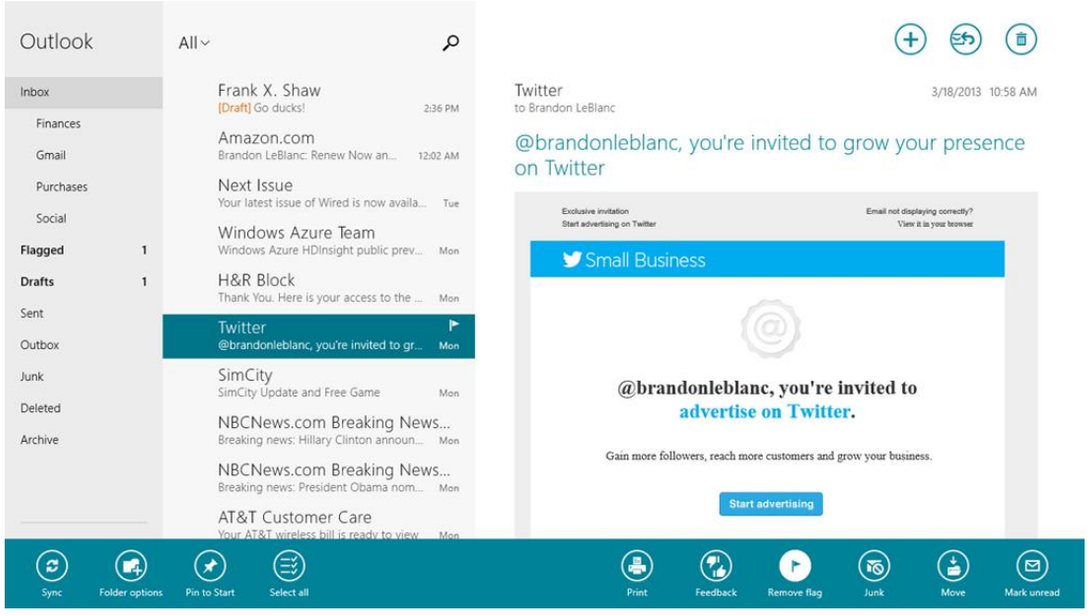
2



Bottom Edge Swipe: Taskbar

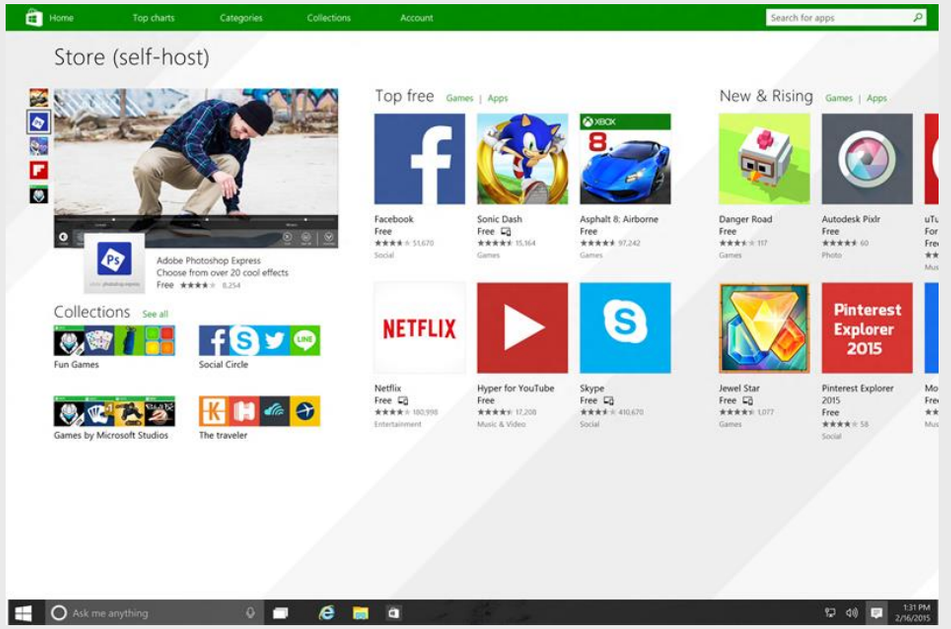
Windows 8.1

Bring up app commands.



Windows 10

Bring up the taskbar when an app is full screen.



Windows 10 Touch Hardware Requirements

Easier Win10 Touch Requirements for Compatibility

Attribute	Windows 10 Requirement
HID Compliance	All digitizers are required to be HID compliant
Ghost Points	No ghost contacts are reported
Accuracy	<= +/- 1mm (outside 3.5mm from edges) **<= +/- 2mm (within 3.5mm of all edges)**
Move Latency	**For <7", <= 35ms** **For >=7", <=25ms**
Down Latency (Active)	**<= 35ms**
Down Latency (Idle)	**<= 150ms**
Cold Boot Latency	Immediately responsive once the display is active
Resolution	>= Native display resolution or greater

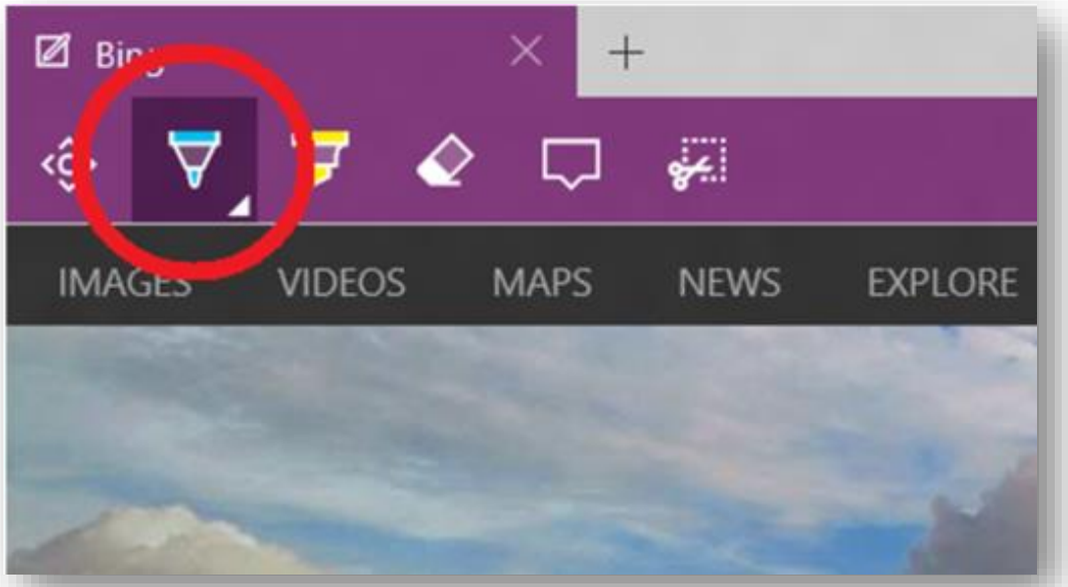
Easier Win10 Touch Requirements for Compatibility

Attribute	Windows 10 Requirement
Linearity (Moving jitter)	<= +/- 1mm (outside 3.5mm from edges) **<= +/- 2mm (within 3.5mm of all edges)**
Stationary Jitter	**<= +/- 0.5mm**
Finger Separation	**<= 8mm [Edge to Edge]**
Minimum Simultaneous Contacts	>= 5
Buffering	>= 100ms of data
Report Rate	**>=Display Refresh Rate** **<=250Hz**
Custom Gestures	Custom gestures are not allowed
Third party drivers	Desktop: Third party drivers prohibited Mobile: Third party drivers allowed

Windows 10 Inbox App With DirectInk

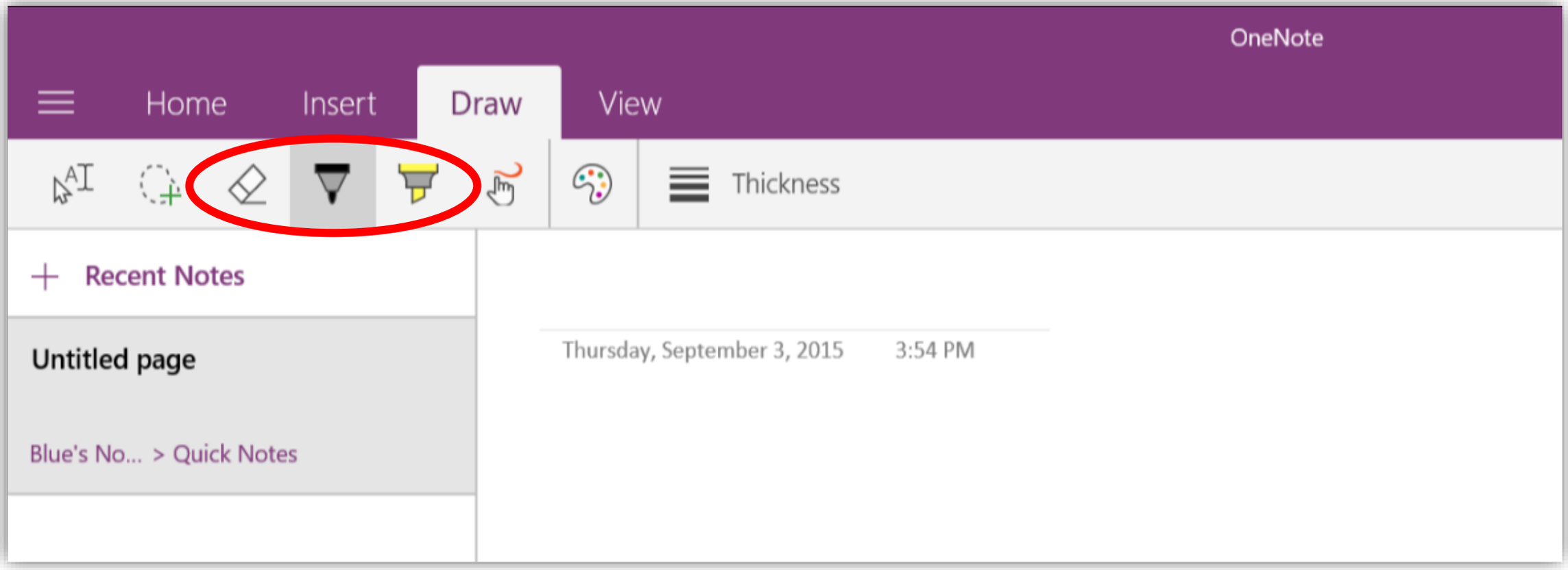
Inbox Applications With DirectInk

- Microsoft Edge



Inbox Applications With DirectInk

- One Note



Windows 10 Pen Hardware Requirements

Windows 10 Pen Hardware Requirements

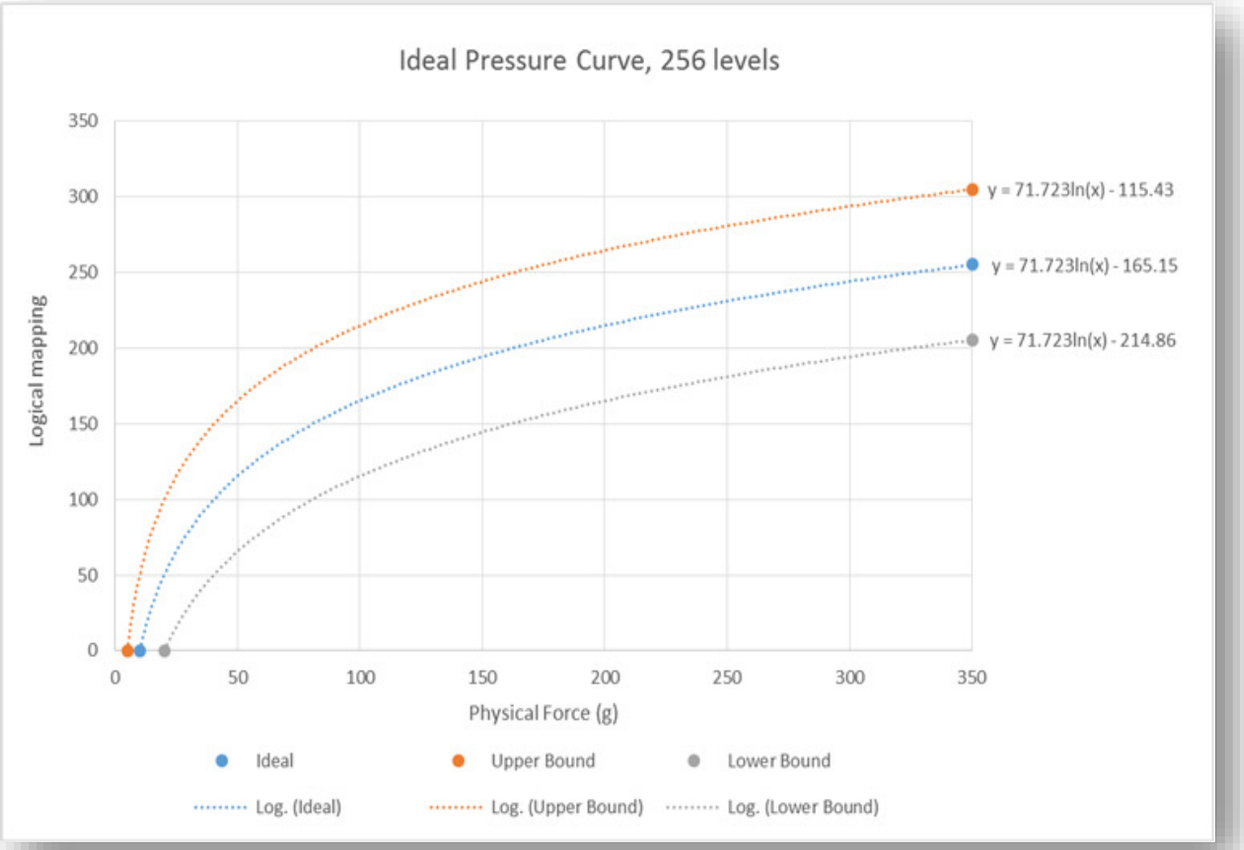
Attribute	Windows 10 Requirements
HID Compliance	All digitizers are required to be HID compliant
Ghost Reporting	No "Phantom" or "Ghost contacts" shall be reported.
Accuracy	<= +/- 0.5 mm(Center), <= +/- 1 mm (within 3.5mm of all edges)
Moving Latency	<= 30ms (Center) (Average over 10 rotations)
Down Latency (Active)	<= 35ms (Average over 50 taps)
Down Latency (Idle - If implemented)	<= 150ms
Cold Boot Latency	Pen shall be immediately responsive once the display is active
Resolution	>= the native display resolution or 150 dpi (whichever is greater)
Eraser	Windows pen solution shall have a hardware affordance on the pen that provides eraser functionality compliant with the associated protocol.

Windows 10 Pen Hardware Requirements

Attribute	Windows 10 Requirements
Stationary Jitter	<= +/- 0.3mm (Center), <= +/- 0.5mm (within 3.5mm of all edges)
Hover Stationary Jitter	<= +/- 0.5mm (Center)
Moving Jitter	<= +/- 0.4mm (Center), <= +/- 0.6mm (within 3.5mm of all edges)
Report Rate	> = 133Hz
Hover Accuracy	<= +/- 1mm (Center)
Hover Range	> = 5mm
Custom Gestures	Irrespective of reporting implementation,additional custom pen gestures are prohibited with the exception of wake gestures.
Pressure	Pen digitizers shall report >= 256 levels of pressure

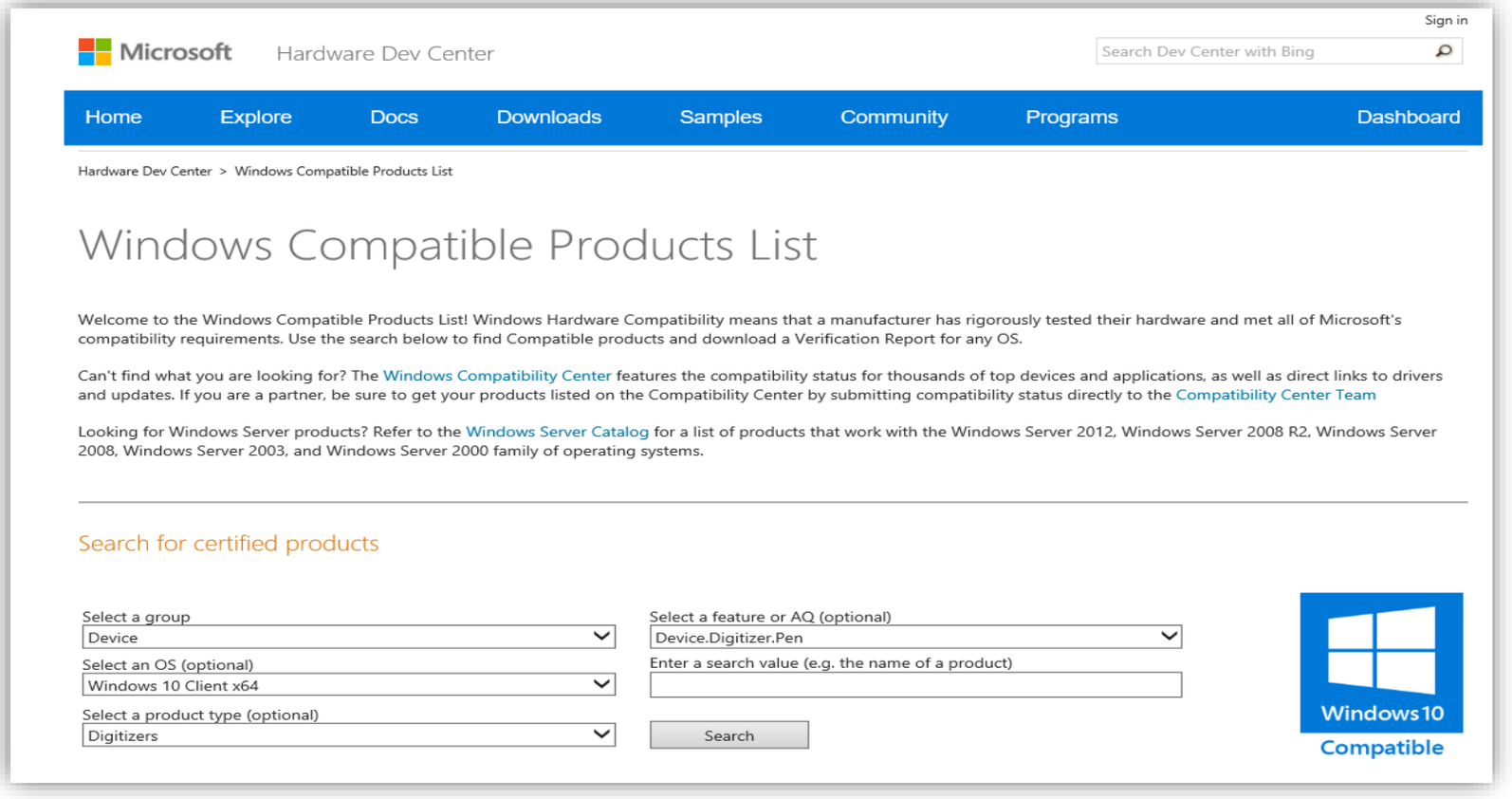
Testing Pressure Reporting

- Pressure Levels and Motion
  - As weight is added to stylus, reported pressure should increase logarithmically
  - Ensures smooth inking performance preferred by artists
  - Pressure should remain fairly stable as pen moves across screen



Windows Compatible Product List

- Compatible Product List:
  - http://sysdev.microsoft.com/en-us/hardware/lpl/



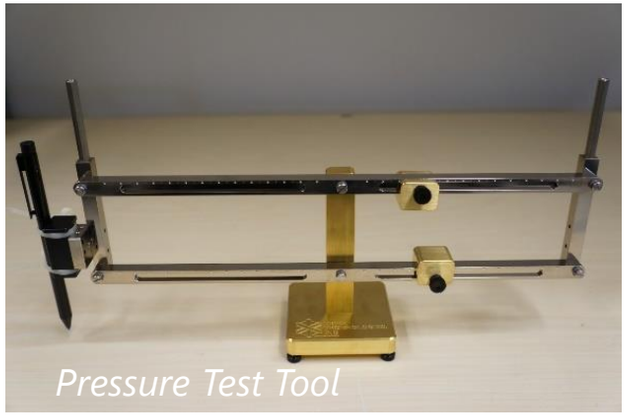
Pen Test Jigs

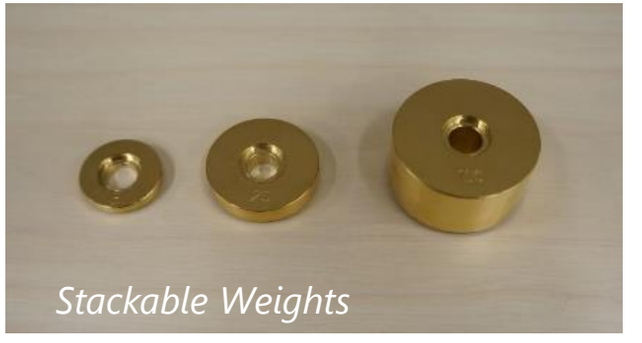
Test Jigs for Pen HLK

- Existing testing tools from Win 8/8.1 are still used for Pen tests:
  - Precision Touch Testing Tool (PT3)
  - Rotational Acoustic Tool (RA)

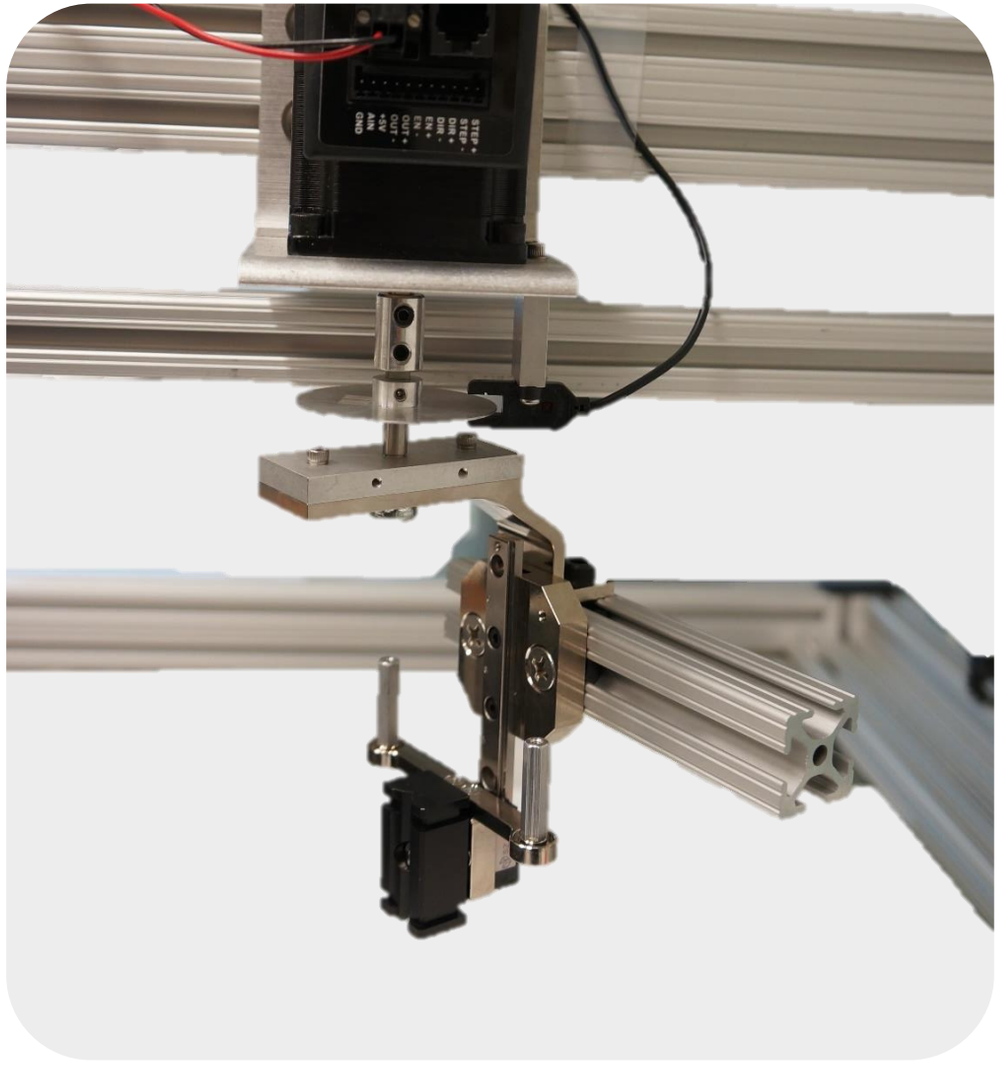
- New accessory jigs to enable Pen testing:
  - Stylus Holders
  - Pressure Test Tool
  - Stackable Weights

Stylus Holders


Pressure Test Tool


Stackable Weights

New Test Jigs: Stylus Holder for PT3/RA



Purchasing Test Jigs

CONTACTS FOR TRIEX AND ITRI

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Compatibility Program

Windows 10 Compatibility Program

- Windows 10 HLK designed specifically for Windows 10
  - Reporting of HQA not a requirement for Windows 8 .1 / 10
  - This change was made available to Windows 8.1 through KB article 3095649. For more information, please see https://support.microsoft.com/en-us/kb/3095649. It is important that OEMs update 8.1 factory images to include this KB article if Touch and or Precision Touchpad devices without the blob are to be used.

- Windows 10 Fast Track program for Touch platforms that ship 8.1 and 10
  - http://blogs.msdn.com/b/windows_hardware_certification/archive/2015/05/19/fast-track-windows-10-compatibility-program.aspx
  - Pen devices are *not* included in Windows 10 Fast Track program
  - For best results, test pen in Windows 10 HLK

Resources

- Device.Input.Digitizer.Touch Requirements
  - https://msdn.microsoft.com/en-us/library/windows/hardware/dn932661(v=vs.85).aspx
- Device.Input.Digitizer.Pen Requirements
  - https://msdn.microsoft.com/en-us/library/windows/hardware/dn932659(v=vs.85).aspx
- Touch & Pen Implementation & Validation Guide
  - http://go.microsoft.com/fwlink/?LinkId=528890

Resources

- Windows Pointer Device Data Delivery Protocol
  - https://msdn.microsoft.com/en-us/library/windows/hardware/dn672287.aspx
- Submission workbook For Touch & Pen
  - http://go.microsoft.com/fwlink/p/?LinkID=691145
- HLK Pen Testing Videos:
  - https://channel9.msdn.com/Blogs/WinHEC/WinHEC-Pen-Validation-Workshop-Taipei-August-Content

Thank You!

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