User Manual

Version 0.9.9.z.47 BETA III
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Introduction and setup

At least 2 machines are needed to operate spacedesk. These machines are connected via a network and running two different software programs:

1. The Primary Machine is a Windows PC, laptop or Surface Pro tablet. It runs the spacedesk DRIVER software. It includes network display server software and display device drivers. This allows to extend or duplicate the Windows Desktop to the screen of another machine over the network.

2. The Secondary Machine runs spacedesk VIEWER program which acts as the secondary display. It can be one (or multiple) of the following:
- Android tablet or phone (Android VIEWER)
- Windows PC, laptop or Surface Pro tablet (Windows Desktop application)
- Apple Mac, iPad or iPhone (HTML5 VIEWER)
- Linux PC and a variety of other machines (HTML5 VIEWER)

The network connection between the two machines can be via cable or wireless. If available, a cable is preferred. Cables usually achieve better performance than wireless connections. It can be one (or multiple) of the following:
- Ethernet cable connecting to a hub
- Crossover Ethernet cable between two machines
- USB to Ethernet cable between two machines
- Firewire (IEEE 1394) cable between two machines
- Phone cable (!!! NOT YET SUPPORTED IN CURRENT VERSION !!!)

System requirements

To operate spacedesk. At least two machines must be connected via a Local Area Network (e.g. Ethernet or Wireless) supporting TCP/IP network protocol.

Primary Windows Machine (network display server)

The spacedesk server runs a Windows service and the WDDM Filter Hook Display Driver which is visible to Windows just as additional virtual monitors on the primary video card. These additional virtual displays can mirror the main screen or extend the Windows Desktop. spacedesk DRIVER software is capturing their screen content, compressing it and transmitting it over the LAN (Local Area Network) to the spacedesk VIEWERs.

- Windows 10 (version 1607 – later only)/ 8.1 / 8 / 7
- Graphics adapter Nvidia / AMD / Intel / Basic Display
- WDDM 2.3/2.2/2.1/ 2.0 / 1.3 / 1.2 / 1.1
- DirectX 12 / 11 / 10 / 9

Secondary Machine or Device (network display client)

Android VIEWER on tablets and phones.
- Android (> version 4.1)

iOS VIEWER on iPhones, iPads and iPod touch
- iOS (> version 9.3)

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Windows VIEWER on Windows PCs, laptops and Surface.
- Windows 10 / 8.1 / 8 / 7
- DirectX 10
- DirectX WARP (Min. 800 MHz CPU / Min. 512MB RAM)

HTML5 VIEWER on any device running operating system with HTML5 Web browsers Chrome (> 16), Safari (> 5.1) Internet Explorer (> 10), Opera (> 27) e.g.:
- Windows Phones (Windows Phone 10 / 8.1)
- Windows Surface, tablet, laptop and PC (Windows 10, 8.1, 8, 7, Vista, XP)
- Mac (OSX)
- Linux PC and laptop

Risk information

Virtual displays are NOT supported by Microsoft Windows. spacedesk WDDM Drivers on the Primary Machine are using approaches and technologies which are officially NOT supported by Microsoft Windows.

No risk on Windows 10

spacedesk WDDM driver on Windows 10 is safe. No risk is imposed on overall operating system stability and integrity.

Risk of unreleased non-standard driver on Windows 7-8.1

In rare cases, the spacedesk WDDM driver on Windows 7,8 and 8.1 can cause the situations below:

1. Other applications might stop operating while spacedesk Windows 7 – 8.1 driver is active
A list of known incompatible applications can be found in the appendix of this manual.
Solution: Temporarily deactivate spacedesk driver in spacedesk System Tray menu item “OFF”. Or just uninstall spacedesk.

2. Windows might not operate properly while spacedesk Windows 7 – 8.1 driver is active
There is always a very slight risk that individual features of the spacedesk driver can conflict with the Windows operating system on the Primary Machine. This could result in unavailability of Windows features, crashes and even Windows not booting any more or becoming unusable.

spacedesk has a safety feature. spacedesk emergency disable is deactivating spacedesk driver on the Primary Machine whenever the Windows operating system crashes during boot up. No matter if this was due to spacedesk or not.

It can be enabled again in the spacedesk System Tray menu item “ON” then reboot.

3. Windows upgrade is failing
This can theoretically happen in future version and it is a known problem of spacedesk version Beta III v0.9.9z.6. It prevents Windows 10 from upgrading (e.g. to Windows 10 Creator's Update 1709). Uninstall spacedesk version Beta III v0.9.9z.6 (and install the most recent version if you like) and the problem is solved.

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Setup

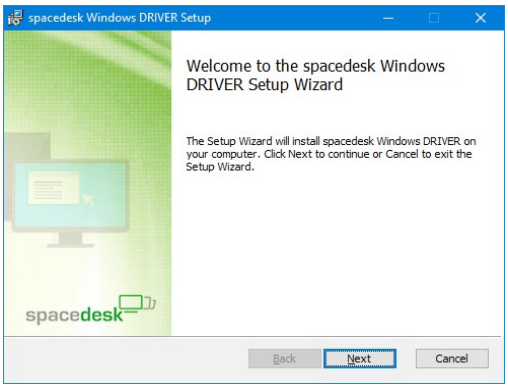
Windows Primary Machine

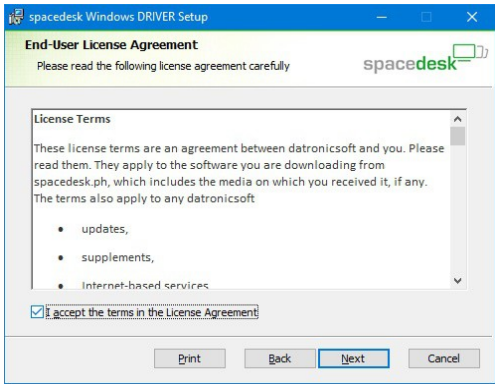
Step 1: Uninstall any previously installed versions (For Windows 7 / 8/ 8.1)
Before installing a new spacedesk version, uninstall any previous version. Skipping this step may result in driver conflict and improper operation. Uninstall of spacedesk can be done on Windows Control Panel → Programs and Features.
For Windows 10 primary machine, in case previous spacedesk version is 0.9.9.z.25 - above, no need to uninstall. Just proceed with running the new msi installer then it will upgrade to latest version.

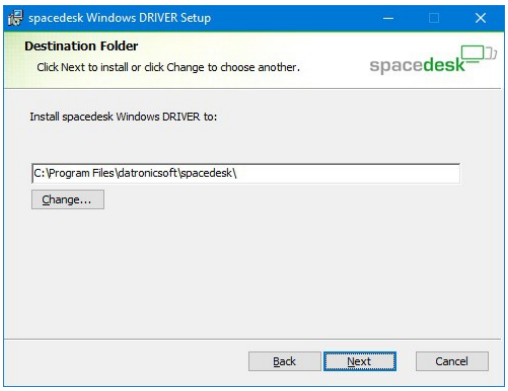
Step 2: Run the spacedesk Driver installer

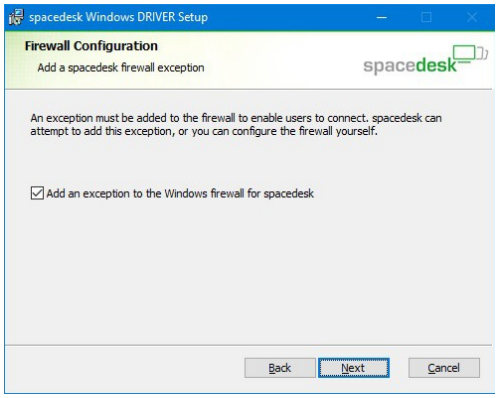
For Windows 10 version 1607 – later machine
spacedesk_driver_Win_10_32_v099z47_BETA.msi for x86 platform
spacedesk_driver_Win_10_64_v099z47_BETA.msi for x64 platform

For Windows 7 / 8/ 8.1 machine
spacedesk_driver_Win_7_32_v0.0.1l.Legacy.HighRisk.NoRelease.msi
spacedesk_driver_Win_7_64_v0.0.1l.Legacy.HighRisk.NoRelease.msi









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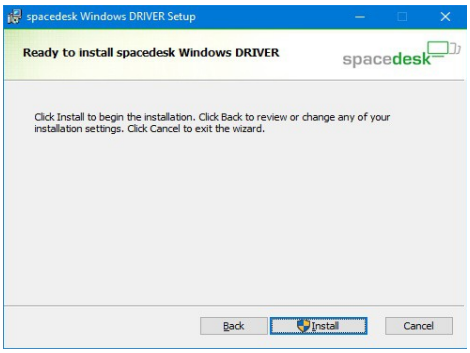
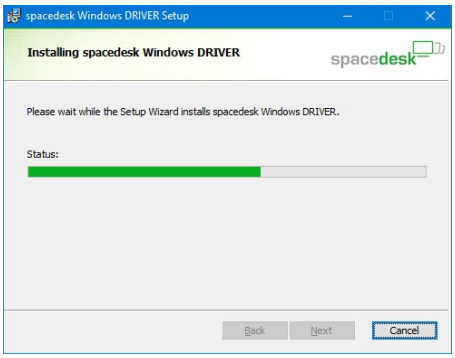


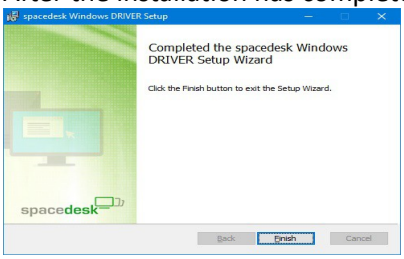


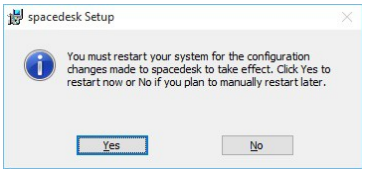
Step 3: Windows security confirmation for driver install (Windows 7 only)

A “Windows Security” window will pop up. Select “install” to proceed with the setup.

Step 4: Reboot (Windows 7 / 8 / 8.1 only)

After the installation has completed, reboot the system.

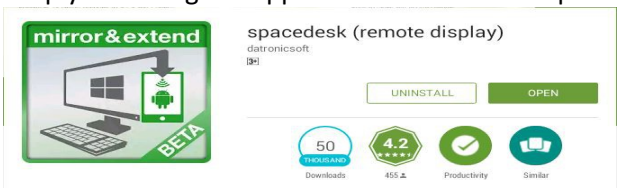




Note: For Windows 10 (Anniversary Update 1607 – later) primary machine, reboot is not needed. Client connection can be done right after spacedesk Driver installation.

Android Secondary Machine or Device install

Android VIEWER is installed from the Google Play Store. Uninstalled can be done by simply removing the app on the local tablet or phone operating system's settings.



Windows Secondary Machine or Device install

A Windows PC, laptop or Surface tablet can be used as Secondary Machine.
spacedesk Windows VIEWER needs to be downloaded from the spacedesk website. It needs setup and installation as shown below.
Run the spacedeskWindowsVIEWER setup installer, spacedeskWindowsVIEWER_v099z47_BETA.msi

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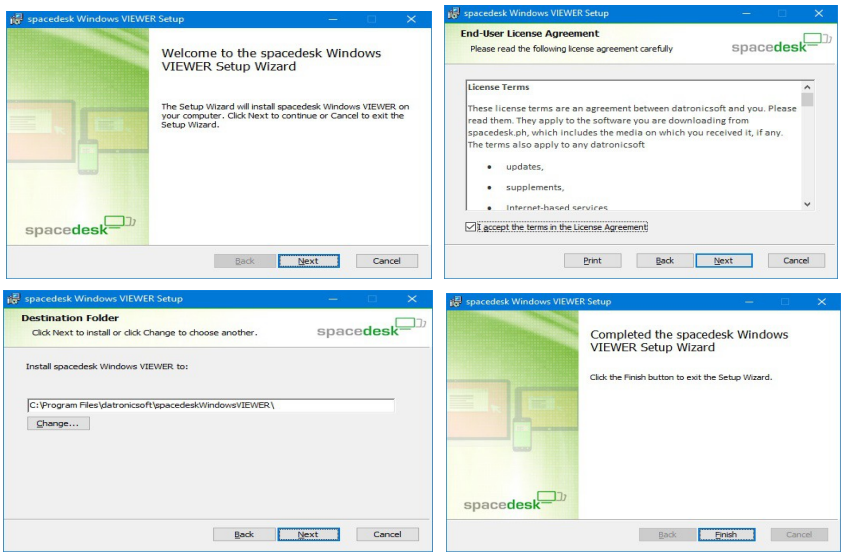
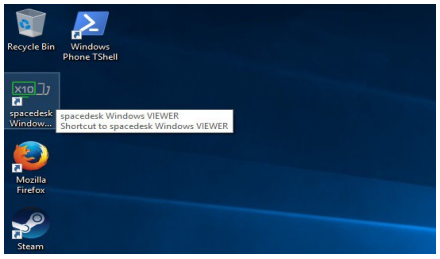


After a successful installation of Windows VIEWER application a shortcut is created on the desktop.



HTML5 VIEWER on other Secondary Machines or Devices

For spacedesk HTML5 VIEWER, no setup installation is needed on the Secondary Machine. HTML5 VIEWER operates with a standard web browser without any setup needed upfront. It can be opened directly from the website http://spacedesk.ph/html5viewer/

It is important to understand, that spacedesk HTML5 VIEWER does not operate over the internet. It does not need an internet connection. It does not even need to be opened over the internet as described above. The HTML5 page can be saved locally.

Local install (optional): The web page can be saved to be used off-line even without internet connection. Follow the instructions below:

- Refresh using Ctrl-F5 keys after opening HTML5 page
  (this ensures that everything is updated).
- For Google Chrome browser, use the the menu "Tools" and select "Add to task bar".
- For Microsoft Internet Explorer browser, use the the menu "Tools" and select "Add site to apps"

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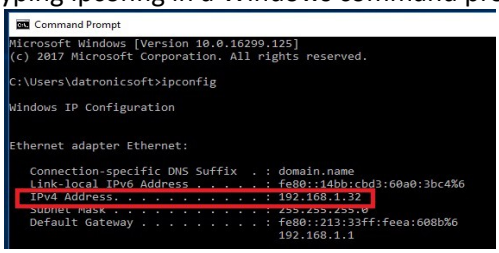
Connecting a new display monitor over the network

Establishing the network connection

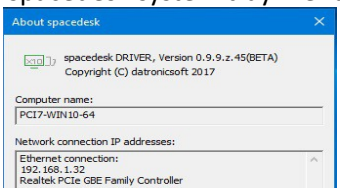
Step 1: Find out Windows Server network IP address and machine name

The IP address of the server can be determined in various ways:'

- Typing ipconfig in a Windows command prompt.



- In spacedesk system tray icon left mouse click -> About...
- In spacedesk system tray menu -> About..



Step 2: On the client side, try to discover the server

In most cases, spacedesk network clients can do automatic server discovery.

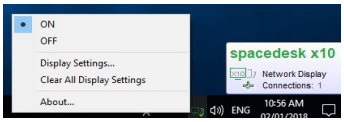
Step 3: On the client side, initiate connection to server

If the server could be discovered in the previous step, the connection can be established right away.

If the server could not be discovered, then the server IP address or machine name needs to be entered manually before initiating the connection.

Step 4: On the Windows server side, check if the connection is established

When hovering the mouse over the spacedesk System Tray icon on the spacedesk server, the number of successfully established connections can be seen.



Connecting a display by Android VIEWER

Step 1: To connect, just open the spacedesk Android VIEWER.

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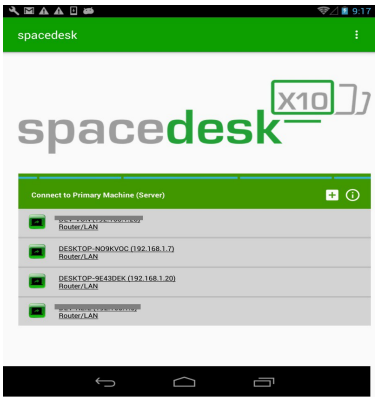
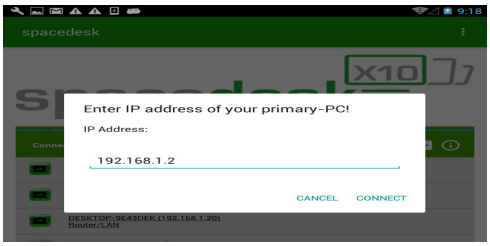
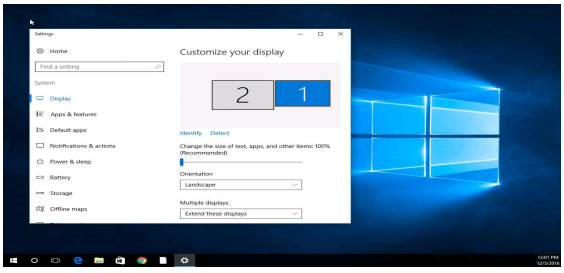


Step 2: Just select the desired server on the list of detected primary machines to automatically connect. Or manual input of server's IP address is also available by selecting the “Add Server manually” at the bottom of the server list then type the IP address of primary machine where the spacedesk DRIVER is installed then click Connect.



While the “Settings” option allows the user to adjust the image quality and resolution settings of the client screen.

Step 3: After selecting the server's IP address, click the “Connect” button to start the connection.



Note: At this point, connection was successfully established and Android VIEWER can now “extend” or “duplicate” the display of the primary PC.

Step 4: In case the screen of the device automatically goes off and needs to tap the screen, it can be easily set on the device's settings to prevent from screen timeout from happening frequently.

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On Android, for example just go to Settings → Display → Screen Timeout then set to its maximum (e.g. 30 minutes).
On iPhone or iPad, just go to Settings → General ->Auto-Lock then set to its maximum (e.g. 5 minutes) or set it to “Never” so it will be turned off temporarily.

Step 5: Once connected, the user can be able to disconnect the Android VIEWER properly by tapping the back button of the Android device.

Connecting a display by iOS VIEWER

Step 1: To connect, just open the spacedesk iOS viewer app installed in iPhone/iPad device.

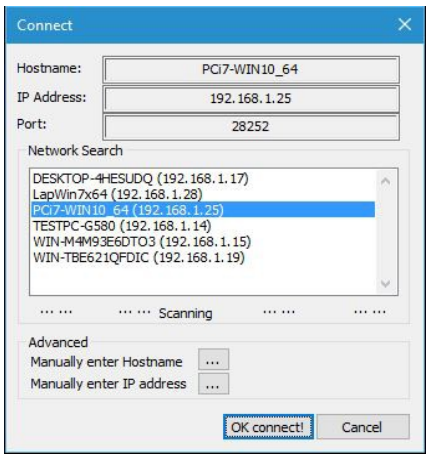
Step 2: Just select the desired server on the list of detected primary machines to automatically connect. Or manual input of server's IP address is also available by selecting the “+” button on the upper right corner of the application screen.

The settings button on the lower left part of the screen allows the user to select for the custom resolution, compression settings and remote control enable/disable.

Connecting a display by Windows VIEWER

Step 1: Run the shortcut of Windows VIEWER located on the desktop of the secondary machine.

Step 2: The “Connect” dialog box of the Windows VIEWER running in the secondary machine allows the user to connect to the machines that has the spacedesk DRIVER running by selecting its computer name with its corresponding IP Address in the Network Search box.



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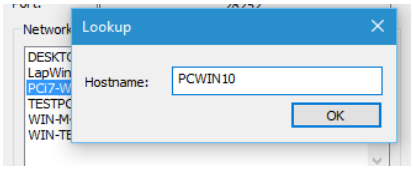
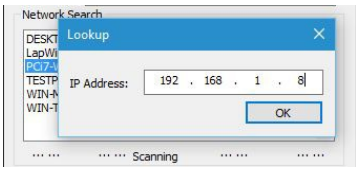
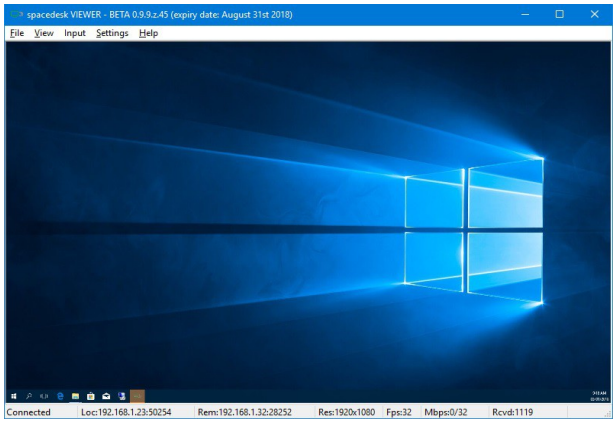
spacedesk users can also choose to manually enter the hostname or the IP address of the spacedesk server machine. This advanced option can be helpful in case network search box is not displaying a particular server machine.

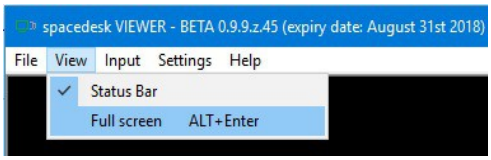




Note: At this point, connection was successfully established and Windows VIEWER is now able to "extend" or "duplicate" the display of the primary computer depending on the mode (Desktop Extension or Desktop Duplication) that was previously selected by the user.



Step 3: To enable Full screen mode of the application just select View → Full screen or press "Alt + Enter" key or just by double clicking the viewer screen. Upon entering the full screen mode it will prevent the client from switching to display-off or the screensaver application as long as the login screen display on resume is disabled. To exit from full screen mode just press the "Esc"or "Alt + Enter" key or double click it again.



Connecting a display by HTML5 VIEWER

Step 1: To connect via HTML5 VIEWER, a Windows PC or other device such as smartphone, tablet, iPad, etc. can be used as secondary machine. The device needs an updated web browser (e.g. Google Chrome, Opera, etc) installed. Go to "http://spacedesk.ph/html5viewer/" (careful – case sensitive)

Step 2: Type the IP address of primary machine where the spacedesk DRIVER is installed. The "Need Help?" button below the Connect button provides an instructions on how to get the IP address of server machine.

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While the “Advanced Performance Options” button allows the user to choose the advanced settings of the HTML5 VIEWER, such as the desired appearance whether in full screen or windowed, the scaling type, compression quality to adjust the image quality and the color depth type for the color quality of the image. (see the definition of color depth type on Performance tuning chapter of this manual).

Step 3: Type the server's IP address on the HTML5 VIEWER then click the “Connect” button to start the connection.

Step 4: Once connected, the user can be able to reconnect or disconnect the HTML5 VIEWER properly by selecting the “Show Menu” option at the upper right corner of the view.

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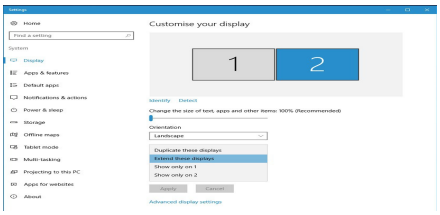
Operation and configuration settings

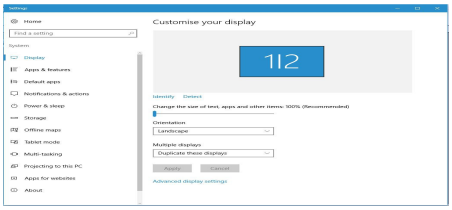
Below a few configuration settings to adjust spacedesk operation to individual needs.

Display Control Panel for selecting desktop extension or desktop duplication (mirror)

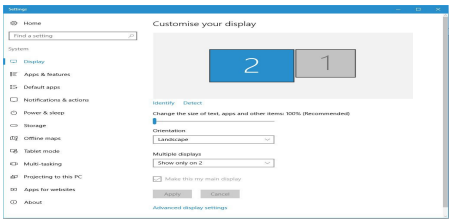
Right Mouse Click on Desktop → context menu “Screen Resolution” leads to Display Control Panel. Display Control Panel can be used to change display resolutions and to verify proper operation. During Desktop Extension the following status should be shown:



During Desktop Duplication (Mirror) the following status should be shown:

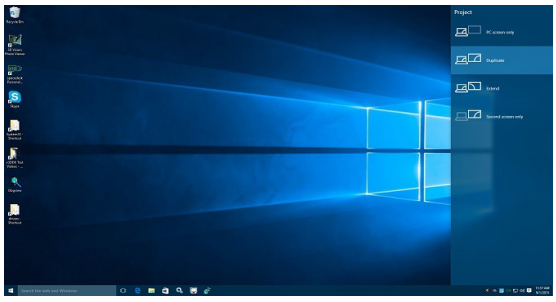


During Single Output (Second Screen Only) the following status should be shown:



Display Switch for selecting desktop extension and desktop duplication (mirror)

Display Switch (Windows logo + P) can also be used to change modes



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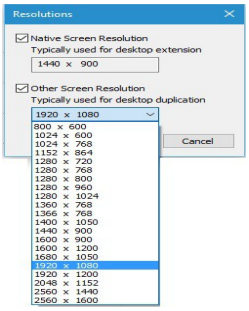
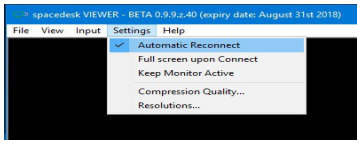
Screen resolution

The “Resolutions” dialog box of the Windows VIEWER Settings allows the users to use up to two resolutions. The client's native resolution can be enable and use by checking the box of “Native Screen Resolutions”.Then the user can also add another resolution by selecting one of the typical screen resolutions on the combo box.



Automatic Reconnect

The “Automatic Reconnect” option of the Windows VIEWER Settings allows the user to enable the automatic re-connection of the VIEWER to the server machine in case of sudden disconnection from system sleep or hibernate or from any kind of unwanted disconnection.



Full screen upon Connect

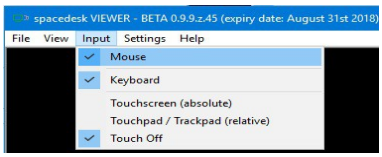
The “Full screen upon Connect” option on Windows VIEWER Settings will enable the automatic switching to full screen mode upon connecting to the server.

Keep Monitor Active

The “Keep Monitor Active” option on Windows VIEWER Settings will prevent the secondary machine's monitor from going to Display Off or System Sleep only when Windows VIEWER is connected to the server.

Mouse, Keyboard and Touchscreen Input

The “Mouse, Keyboard and Touchscreen ” option on Windows VIEWER → Input menu will enable the remote control feature of spacedesk. Users can now use the mouse, keyboard remote control from the client machine. To exit from remote control mode just press “Alt+Shift” key combination.



For enabling touchscreen, two options are available absolute and relative mode. Touchscreen (absolute) mode provides an absolute input position of the mouse

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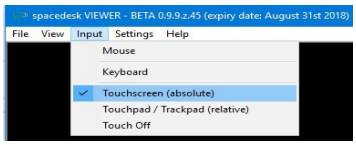
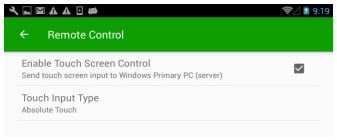
pointer within your Android viewer screen.
Touchpad/Trackpad (relative) mode is using relative desktop coordinates.

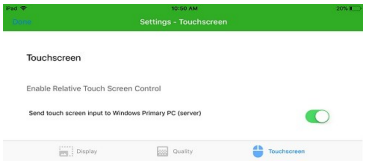


On Android VIEWER, touch screen feature is also supported. It is enabled by default on Settings → Remote control → Enable Touch Screen Control option.



There aretwo different option on how touchs feature can work on Android device.
- Absolute touch provides an absolute input position of the mouse pointer.
- Relative touch which works like a touch pad.

On iOS VIEWER, only Relative Touch Screen Control option is available at the moment.

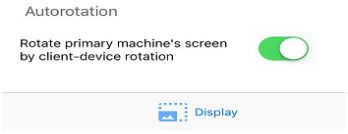


On HTML5 VIEWER, just go to Advanced Performance Settings → Remote Control to enable remote control feature. However, no keyboard control only mouse and touchscreen support.

Below are the touch gestures for Android and HTML5 Viewer:
Move pointer: Tap with one finger and drag anywhere on the screen.
Left-click: Tap the screen with one finger
Right-click: Tap and hold the screen, then release.
Drag Windows/Object: Tap two times for relative OR tap once for absolute, hold then drag.

Auto Rotation

The “Auto rotation” option on iOS viewer settings allows users to enable an automatic rotation of viewer screen according to current display orientation(e.g. Portrait or Landscape mode) of iOS device.



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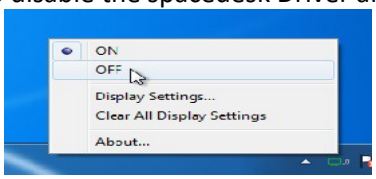
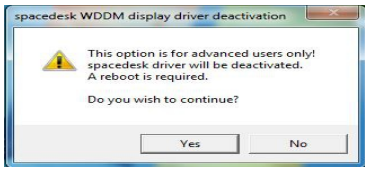
Auto rotation option on other viewer app (Windows and Android) will soon be available.

Disable spacedesk server

Disabling the spacedesk server temporarily to prevent other spacedesk client connection can be done via spacedesk tray menu → OFF. For Windows 7 – 8.1, it will also disable the spacedesk Driver after reboot is performed.





Auto-start Windows viewer

To set the spacedesk Windows VIEWER app to auto start during Windows start up:

- open the run command (Window+R key combination),

- paste "%appdata%\Microsoft\Windows\Start Menu\Programs\Startup" then enter,

- on the Startup folder just copy the spacedesk Windows VIEWER shortcut file found on your Desktop.

Performance tuning

The following variables are influencing display performance:
- Network bandwidth
- Screen Resolution
- Color depth
- Image compression

Network bandwidth

Network cable

The faster the network, the faster the display performance. Cable networks tend to have better performance than wireless networks. The fastest option is always a direct connection via network cable, e.g. a Gigabit Ethernet.

Currently minimum reasonable network bandwidth needed by spacedesk BETA ranges around 50 Mbit/sec. Substantial improvements including support of slower networks are planned for the first release version.

USB Tethering

If the secondary machine is a smartphone or tablet that supports USB tethering, use the USB cable to establish a network connection between primary and secondary machine. Usb tethering typically supported on devices with Cellular Network.

For Android device just go to settings and find the Tethering & portable hotspot,

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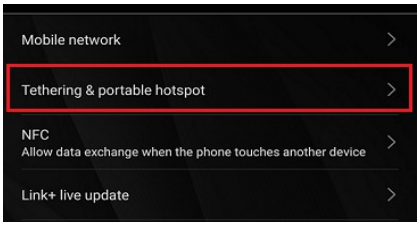
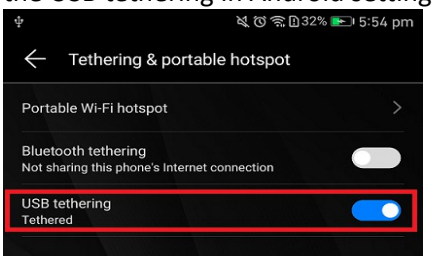


Connect the USB cable of Android device to Windows primary machine, then enable the USB tethering in Android settings.



For iOS device, make sure to turn OFF first the Wifi. Connect the iOS device to Windows primary machine via USB lightning cable. Then switch ON the Cellular Data and Personal Hotspot and an option will pop-up and select USB Only.

Mobile Hotspot

Another way to improve performance with wireless network is by configuring the Mobile Hotspot option on Windows 10 PC/laptop. Just go to Start → Settings → Network & Internet → Mobile Hotspot, then turn it ON. Try to connect the client device(phone/tablet/laptop) to the wireless network name generated by the Mobile Hotspot. Then run the spacedesk VIEWER and connect to the IP address of server machine, in this case it should be the IP address of the Mobile Hotspot network generated (Microsoft Wi-Fi Direct Virtual Adapter).

Screen resolution

The lower the resolution of the networked display screen, the faster the display performance.

Color depth and image compression

spacedesk uses image compression to improve display performance. This mechanism reduces image size before transferring images over the network. The spacedesk image compression algorithm is lossy. It reduces quality and color depth of the image

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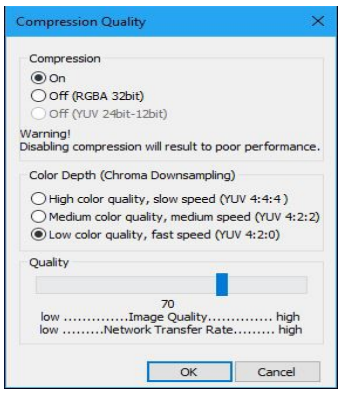
On fast networks, color depth and image quality can be kept very high while still achieving good performance.

On slow networks, color depth and image quality need to be reduced to achieve good performance.

spacedesk performance settings

The “Compression Quality” dialog box of the Windows VIEWER Settings allows the user to enable or disable the compression of screen updates. To choose OFF means to use RGBA 32-bit color format of screen image and no image quality reduction will be done. To choose On means that the user allows to reduce color depth by Chroma Downsampling and adjusts the compression quality to find the ideal image quality and performance speed.



YUV 4:4:4 - No reduction of color information. High quality of screen image but, performance intensive. Can only be used on very fast networks
YUV 4:2:2 - Reducing the color information by 1/3 (from 24 bit to 16bit) reducing color quality of screen image and improving performance.
YUV 4:2:0 - Reducing the color information by 50% (from 24 bit to 12bit) to achieve best possible performance.

The color loss caused by the above mechanism typically not very much noticeable for the human eye, especially when there is a lot of motion on the screen (e.g. playing a video). Thus YUV:4:2:0 is the default setting which can apply to many user applications.

The compression setting can be varied between 100 (no compression) and 0 (maximum possible compression). The default value is 70 which still tends to show a clear enough and detailed enough image for many user applications.

Troubleshooting Primary Machine

Setup

Step 1: Check Windows 10 version

Latest spacedesk Windows 10 Driver version now only supports Windows 10 version 1607 and above. Just run "winver" to check Windows 10 version. If the version is older than version 1607 (Build 14393) just upgrade to Windows 10 version 1607 or

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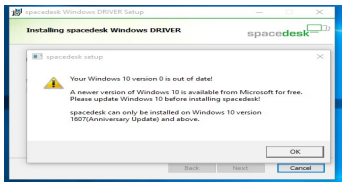
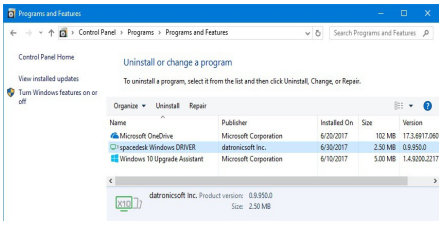
above, in order to use the latest spacedesk driver. Use Windows 10 Update Assistant to upgrade Windows 10 to latest version for free, just click here..



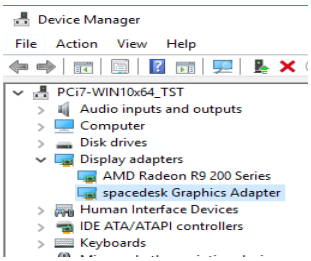
Step 2: Check installed versions

First, make sure that the most recent version is properly installed.



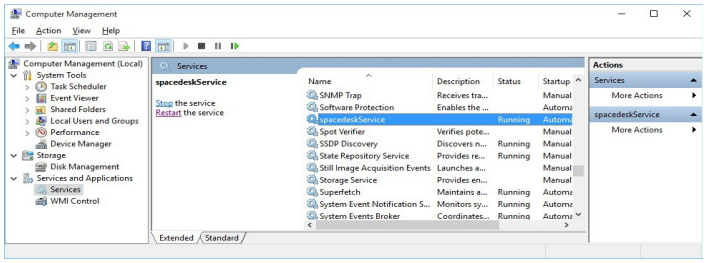
Step 3: Check if spacedesk Graphics Adapter is installed.

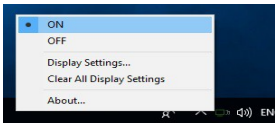
For Windows 10 (version 1607 - later)primary machine, open Device manager and check below Display Adapters if spacedesk Graphics Adapter is installed correctly and enabled.



Step 4: Check if spacedeskService is operating

Make sure that spacedesk service has started and spacedesk Tray icon is visible in task bar's notification area and turned ON.





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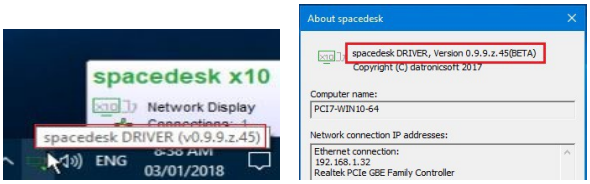
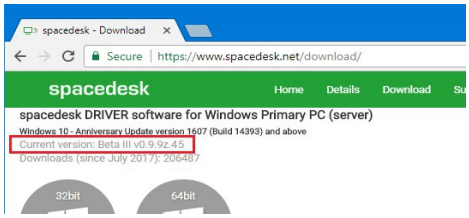
Step 5: Check if spacedesk version is updated.

Check spacedesk version by hovering the cursor over the spacedesk tray icon or by clicking the “About..” option of spacedesk tray menu.

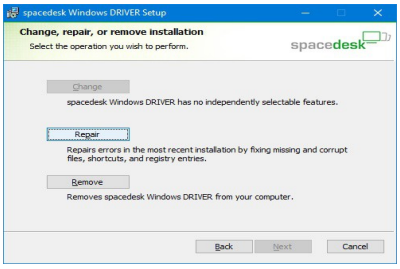


Then compare this version with the website version.



Step 6: Repair spacedesk Driver.

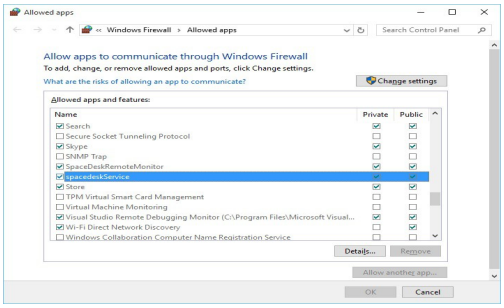
Installation repair can be done by running the same msi installer version then select Repair button. Or just go to Windows Control panel → Programs and Features then search for spacedesk Driver, right-click then repair. This procedure only applies for Windows 10 primary machine only.



Network Connection

Step 1: Check Windows Firewall settings.

Check the firewall if spacedeskService.exe is allowed on private or public network. Open Control Panel → Windows Firewall → Allow an app through Windows Firewall, allow an another app then browse for spacedeskService.exe located at “C:\Windows\System32” folder.



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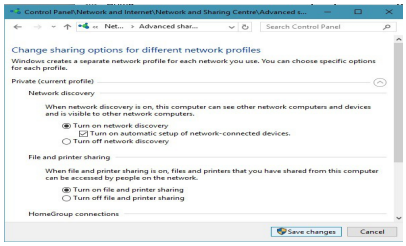
Step 2: Check if Network Discovery and File Sharing is enabled.

If spacedesk VIEWER is unable to discover the IP address of server machine, check if network discovery and file sharing is enabled. Go to Windows Control Panel → Network and Internet → Network and Sharing Center → Change advanced sharing settings



Step 3: Check if anti virus firewall is open for spacedeskService.exe.

If there is anti virus (e.g. Avast, AVG, etc.) running on server machine, check the firewall settings if spacedeskService.exe is also allowed, if not just add it manually on the anti virus firewall settings.

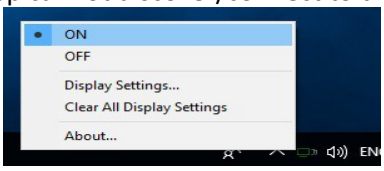
Step 4: Check if TCP port of spacedeskService is open.

SpacedeskService is currently using TCP port 28252. it can be verified by running command prompt as Admin then type the command: **netstat -a -b.**
In case this port is blocked on primary machine, just open this port on Windows Firewall.

- Just go to Windows Control Panel → System and Security → Windows Firewall → Advanced settings.
- Highlight and right-click highlight Inbound Rules → New Rule.
- Add the port you need to open and click Next.
- Add the protocol (TCP or UDP) and the port number into the next window and click Next.
- Allow the connection in the next window and click Next.
- Select the network type as you see fit and click Next.
- Name the rule and click Finish.

spacedesk Server OFF

spacedesk server can be enabled and disabled via system tray menu. In case viewer app cannot discover/connect to the server, make sure that this menu is ON.



spacedesk Legacy driver has the ability to detect if Windows is not properly shut down or if there is a system crash during Windows start up(no matter if it is the fault of spacedesk or any other software) and it will disable itself

spacedesk Server ERROR

spacedesk server can be in ERROR state if spacedesk Graphics Adapter in device manager has yellow exclamation mark which indicates an error in driver. Check in

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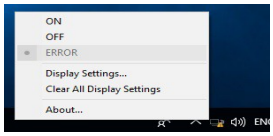
`C:\Windows\system32\drivers\UMDF` directory if "spacedeskDisplayUmode.dll" is present then try to disable-enable the driver in device manager and try to switch ON in spacedesk tray menu.

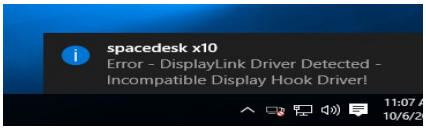


For Windows 7/8/8.1 primary machine, check for "spacedeskHookKmode.sys" in `C:\Windows\system32\drivers` directory, then reboot.

Incompatible Display Hook Driver detected

Step 1: Check if system tray bubble reports incompatible display hook driver

This error message indicates that another WDDM filter hook display driver is present on the system.



Step 2: Uninstall known products using incompatible display hook drivers

This is usually installed by a USB-Display or Zero-Client of the following brands: Display Link, Duet Display, Fresco Logic, MCT, Microchip/SMSC, OSBase, Splashtop X-Display and Extended Display HD, etc.
Display hook drivers are not standard Windows drivers. All products relying on such drivers are incompatible with each other. They cannot coexist on the same system. This includes spacedesk.
Uninstall the other product / hook driver detected, then reboot the spacedesk server machine and try to connect spacedesk client again.

Step 3: Check if incompatible products did not uninstall OSBase driver

Various products using the OSBase driver do not properly remove it upon uninstall (e.g Duet Display, Fresco Logic, etc.). After uninstalling their product, the leftovers of the OSBase driver still need to be removed manually following the instructions below:

- Go to Control Panel -> "Add Remove Programs". If you can find OSBase display driver software, uninstall it.
- Check if OSBASE drivers are installed by running the following commands:
  "sc query ddkmd"
  "sc query ddkmdldr"
  "sc query ddmgr"
- If installed, uninstall OSBASE drivers by running the following commands:
  "sc stop ddmgr"
  "sc delete ddmgr"
  "sc delete ddkmdldr"
  "sc delete ddkmd"
- Reboot your PC.

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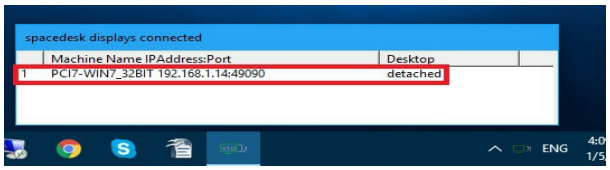
Various

Step 1: Detached second display.

In case of gray or black screen in Windows desktop application or always connecting status on HTML5 VIEWER or “Display is detached” message showing in Android/iOS VIEWER, click the spacedesk displays connected window on the task bar and check if status is “detached” then open the windows display settings of the server machine. Just select "Display Settings" in spacedesk tray menu then try to attach it by selecting extend or duplicate.



Step 2: Mirror mode failed.

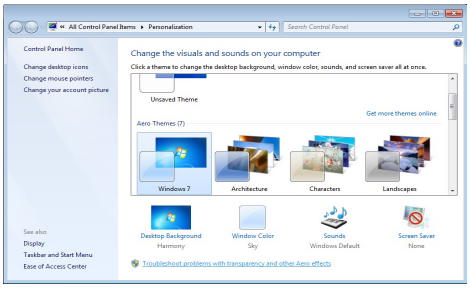
For Windows 7 – 8.1 primary machine, if desktop extension is working but duplication is always failing, make sure that the "Settings → Resolutions → Other Screen Resolution" of Windows VIEWER OR the "Advanced Performance Options → Custom Resolution" of HTML5 VIEWER OR the “Settings → Resolution” of Android VIEWER, OR Settings → Display → Custom Resolutions of iOS VIEWER should matched the native resolution of the primary machine's monitor.

For Windows 10, if duplicate option is not available in Display settings try to update the graphics adapter by Windows Update or manual download of driver from official website.

If duplication is still not available after driver update, then it's probably because the driver does not support mirror mode anymore. Please refer to Known issues chapter below for Mirror mode not supported.

Step 3: Windows 7 Aero “Glass Look” is disabled (Transparent effect)

Select “Troubleshoot problems with transparency and other Aero effects.
Under some circumstances setup is disabling Aero “Glass Look”. Only clicking the link on the screen shot below enables it again.



Step 4: Clear All Display Settings.

In case a previous version of spacedesk was installed, it is recommended to Clear the existing Display Settings on primary pc that may prevent spacedesk from working properly. After a successful installation of latest spacedesk version, make sure to right-click the spacedesk Tray icon then select Clear All Display Setting before trying to connect with spacedesk VIEWER.

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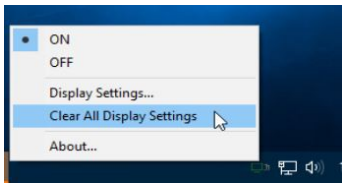

Known issues

Mirror mode not supported in Windows 10 with old version of graphics adapter.

Desktop duplication of primary monitor to other displays is disabled in Windows display settings of Windows 10 with old version of graphics adapter (<WDDM 2.0).

Just download the latest driver version from its website OR if it did not work try to downgrade the graphics driver to Microsoft Basic Display driver via device manager.

Multi-GPU Technology not supported.

spacedesk is currently not compatible with Nvidia SLI Technology or AMD Crossfire. In case SLI is enabled, spacedesk will not work properly.

Virtual Machines

Virtual machines are officially not supported by spacedesk. It may work on some cases but some problems may occur such as strange mouse pointer behavior, black screen on client, etc.

Crashing Nvidia Control Panel

Nvidia Control Panel may not work properly while spacedesk Legacy driver is enabled. Temporary solution for this issue would be disabling the spacedesk driver through spacedesk Tray icon menu. Just select “OFF” then restart the machine to apply the settings.

Emergency procedure

Start Windows in safe mode.

If the installation of spacedesk has caused a problem (e.g. unable to start windows anymore , black screen on main monitor, etc.) it is recommended to boot into safe mode.

Windows 7 safe mode: Press and hold f8 key upon computer restart and before the windows logo appeared. Then in advanced boot option screen use the arrow keys to select the safe mode option then press Enter key.

Windows 8/8.1/10 safe mode: There are 2 ways to go to Startup Setting:

- **a)** Press Shift + Restart button then a Startup Settings screen will appear,
- **b)** If Automatic Repair shows upon restart a boot menu will appear click Troubleshoot → Advanced Option → Startup Settings.

Press Restart button, after pc restart use number/function keys to select the corresponding number to enable the safe mode.

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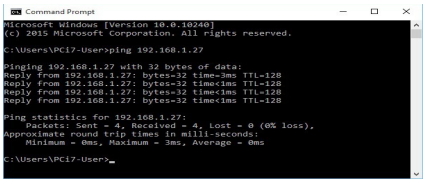
Troubleshooting Network Connection and Secondary Machine

Network connection test

Ping test on Windows desktop/laptop

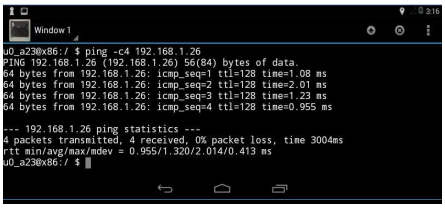
If spacedesk cannot plug the Virtual Display Monitor try to ping test the IP address of another machine to verify if it is reachable across the local network.
A ping test is done to confirm if the machine is successfully connected to a network. Using the Command prompt, type “ping 192.168.x.x”,and check if it will get a reply from the other machine that will indicate that it is also connected to a same network.



Ping test on Android and iOS device

To do ping test on any Android or iOS device, just download any terminal emulator application on Playstore or App store, then try to ping the IP address of the Windows primary machine.

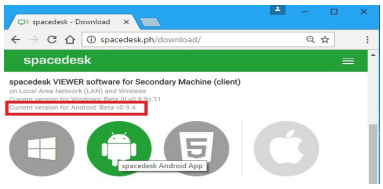
For example, on Android device, just download and install Android Terminal Emulator app from Playstore, then open the terminal and type the command: “ping -c4 192.168.x.x”, -c stands for counter and 4 being the number of times of ping. Then check if it will get a reply from the primary machine that will verify that both primary and secondary are connected on the same network and reachable to each other.



Android VIEWER

Step 1: Check updated Android VIEWER version.

Check spacedesk Android VIEWER app's About option if installed version is the same as the website version.



Step 2: Android VIEWER app on Smart/Android TV not supported.

spacedesk Android VIEWER app is currently not supported on any Android/Smart TV platforms. This feature is already included in the list of features to be implemented but this is not to be expected anytime soon.

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iOS VIEWER

Step 1: Check updated iOS VIEWER version.

Check on iOS Viewer's About info if the app version is updated and same as the most recent version in website. Or check in App store if there's an update available for the app.

Step 2: Disconnection error occurred.

When viewer suddenly disconnects, a disconnect error trace will appear on viewer screen. Try to follow the troubleshooting network connection procedure (for both primary and secondary machine) above. And in case it did not help, just report this error code sequence to spacedesk support.

Windows VIEWER

Step 1: Reset the Windows VIEWER settings in the registry.

If the latest spacedesk Windows VIEWER is not connecting anymore while an older version works, it is recommended to reset the Windows Desktop registry settings. Just open the registry editor by searching for the keyword "regedit". Then go to HKEY_CURRENT_USER → Software then delete the "datronicsoft" registry key, then try to connect again.

Step 2: Slow screen update on Windows VIEWER.

There are some cases that the rendering of screen update in Windows VIEWER is very slow. One of the possible reason is that Windows client machine only has a DirectX 9 graphics driver. It is recommended to upgrade to DirectX 10 - above graphics driver to achieve better performance.

HTML5 VIEWER

Step 1: Check the browser version for HTML5 VIEWER.

If the spacedesk HTML5 VIEWER is unable to connect, check the version of the web browser and make sure that it is updated. If the secondary machine is a smartphone or tablet device the browser and OS needs to be most recent versions supporting websockets. Just go to https://websocketstest.com/ to verify.

Step 2: HTML5 VIEWER on Mozilla Firefox and Microsoft Edge not supported.

spacedesk's HTML5 VIEWER is currently not supported in Mozilla Firefox web browsers due to performance limitations. Please use other web browsers recommended in system requirements chapter.

Step 3: Multiple HTML5 VIEWER connection not supported.

Simultaneous connection of two or more spacedesk HTML5 VIEWER is not supported. spacedesk only allows 1 HTML5 VIEWER client connection at a time.

***Note:** If these troubleshooting procedures does not solve your problem please contact our spacedesk support at https://www.spacedesk.net/contact and don't forget to include the list of information we requested on the page.*

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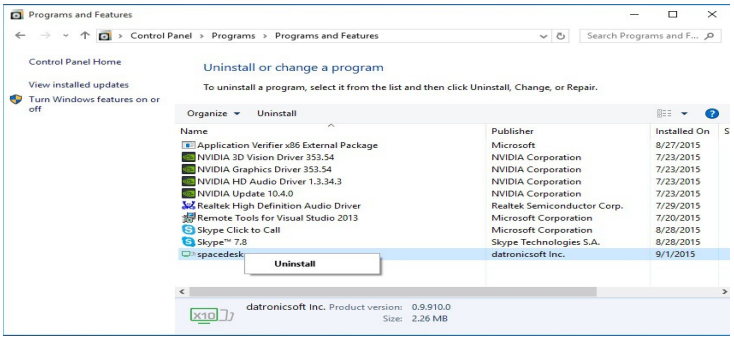
Uninstall on Windows Primary Machine

Uninstall using Windows Control Panel

Uninstall of spacedesk can be done on Control Panel → Programs and Features.



Uninstall using .msi file

An alternative way to uninstall spacedesk is using the spacedesk msi installer file.

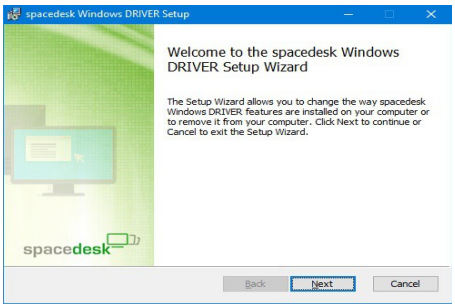
Step 1: Run the setup installer

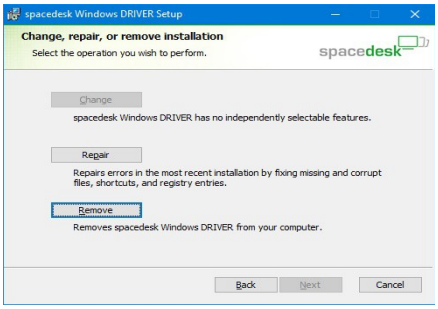
Run the spacedesk Setup installer.

spacedesk_driver_Win_10_32_v099z47_BETA.msi for x86 platform
spacedesk_driver_Win_10_64_v099z47_BETA.msi for x64 platform

Step 2: Click the remove button

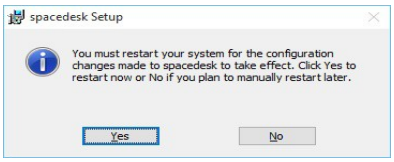
After selecting the Remove button, just click Next until it uninstallation completed.
Starting on version 0.9.9.z.25, reboot is not needed anymore in Windows 10 machine.





Step 3: Reboot (Windows 7 / 8/ 8.1 only)

After the uninstallation has completed, reboot the computer before proceeding with any other task.



Note: *Please do not manually delete or remove the C:\Program Files\datronicsoft\spacedesk folder and its files , to prevent uninstallation problem.*

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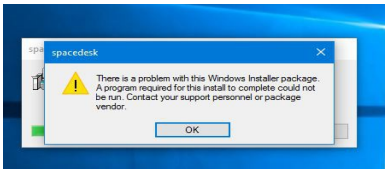
Troubleshooting uninstall

Step 1: Missing spacedesk program files.

Manually deleting spacedesk program files located in chosen directory folder (e.g. C:\Program Files\datronicsoft\spacedesk) is extremely not advisable, doing so may result to uninstallation failure of spacedesk with an error message below.



To fix the problem, just restore the program files (please check your Recycle bin)to its original location and try to uninstall again using the same msi installer version or by Windows Control Panel → Programs and features.

Step 2: Try Microsoft Fix.

If uninstall problem still persist after restoring spacedesk program files, try the Install/Uninstall troubleshooter program from the Microsoft Fix article. If spacedesk is not on the program list, just select “Not Listed” then paste the product code of current spacedesk version below.

spacedesk_driver_Win_10_32_v099z47_BETA.msi:**{1FF4CFAE-32BD-4AFD-B2D4-CBA05F159B80}**
spacedesk_driver_Win_10_64_v099z47_BETA.msi:**{1CDB62B4-D807-4EF0-A810-E5F705E39A8F}**
spacedesk_driver_Win_7_32_v0.0.1l.Legacy.HighRisk.NoRelease.msi:**{C9496F7C-C644-4EA9-8E7A-4E3FA50258B9}**
spacedesk_driver_Win_7_64_v0.0.1l.Legacy.HighRisk.NoRelease.msi:**{BD671A2F-EF62-41CE-A445-BD664D4EFD14}**

for previous spacedesk version:

spacedesk_driver_Win_10_32_v099z46_BETA.msi:**{7AEA16B8-E102-420E-A219-D141FC9D219C}**
spacedesk_driver_Win_10_64_v099z46_BETA.msi:**{2854FEBF-2624-4006-9465-B0910E00F137}**

spacedesk_driver_Win_10_32_v099z45_BETA.msi:**{C4AA73C8-2E5B-433D-AC6D-515AC824A1CE}**
spacedesk_driver_Win_10_64_v099z45_BETA.msi:**{626057BB-37F7-436E-8840-A752A28ACDBC}**

spacedesk_driver_Win_10_32_v099z44_BETA.msi:**{4DB27EF7-21B2-48F1-8CE4-B605D1BF4F26}**

spacedesk_driver_Win_10_64_v099z44_BETA.msi:**{2D7833D2-ED2F-4BF1-B2F8-93D8ECDA6A1B}**

spacedesk_driver_Win_7_32_v0.0.1k.Legacy.HighRisk.NoRelease.msi:**{9FD4E968-DB90-4AEF-91C7-ECBF6E06D3F6}**
spacedesk_driver_Win_7_64_v0.0.1k.Legacy.HighRisk.NoRelease.msi:**{9FDF202D-3D81-4345-9500-B989519A5A85}**

Step 3: Manual uninstall of drivers and services

After successfully troubleshooting uninstall, spacedesk should be removed from “Programs and Features”. To make sure that drivers and services are comprehensively removed, all the steps in the next section “Manual uninstall” need to be executed.

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Manual uninstall (troubleshooting only)

The steps in this chapter should only be done in exceptional cases if needed and if previously discussed with spacedesk support. The regular way to uninstall spacedesk is using Windows Control Panel or the spacedesk msi installer file as described above.

Step 1: Uninstall services

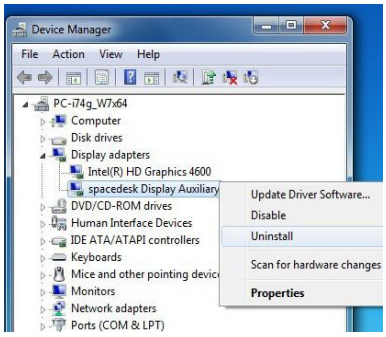
Run a Command Prompt (cmd.exe) "as administrator" and enter the following commands below:
sc delete spacedeskHookKmode (for Windows 7 / 8 / 8.1)
sc stop spacedeskDispKmode (for Windows 10)
sc delete spacedeskDispKmode (for Windows 10)
sc stop spacedeskService
sc delete spacedeskService

Step 2: Uninstall spacedesk Graphics Adapter (for Windows 10 only)

For Windows 10 operating systems, manually uninstall spacedesk Graphics Adapter in Device Manager.This only applies on spacedesk driver version 0.9.9.z.25 – later.

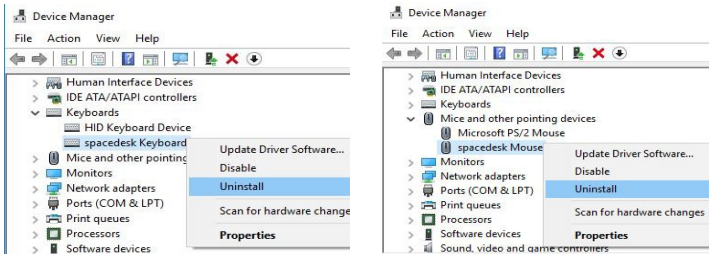
Step 3: Uninstall spacedesk Display Auxiliary (for Windows 7 only)

For Windows 7 32bit and 64bit OS, manually uninstall the spacedesk Display Auxiliary on the Device Manager.



Step 4: Uninstall spacedesk Mouse and Keyboard drivers

Manually uninstall the spacedesk Mouse and Keyboard driver on Device Manager.



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Step 5: Reboot

Reboot the system and ensure that the following registry keys below have been removed:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\spacedeskService

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\spacedeskKtmInputKeybd

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\spacedeskKtmInputMouse

For Windows 7/8/8.1

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\spacedeskHookKmode

For Windows 10

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\spacedeskDispKmode

Step 6: Delete files

Delete all files listed in the appendix of this document underneath “File list” in the Appendix of this document.

Windows Secondary Machine uninstall

Uninstallation of Windows VIEWER on Secondary Machine can be done on Control Panel → Programs and Features. Another way to uninstall is by using the msi installer.

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Appendix

List of incompatible Windows applications

Applications conflicting and causing system instability while spacedesk Display driver is enabled

Skype for business
Fortinet security software

Applications not working in full screen mode on spacedesk display monitor

Various DirectX games (e.g. Witcher 2, Project Cars, Asseto Corsa, Battlefield, etc.)

File list (Windows Primary Machine)

File list (Windows 10)

Windows\System32\drivers\spacedeskDispKmode.sys
Windows\System32\drivers\spacedeskKtmInputMouse.sys
Windows\System32\drivers\spacedeskKtmInputKeybd.sys
Windows\System32\drivers\UMDF\spacedeskDisplayUmode.dll
Windows\System32\spacedeskService.exe
Windows\System32\spacedeskServiceTray.exe

File list (Windows 7, 8, 8.1)

Windows\System32\drivers\spacedeskHookKmode.sys
Windows\System32\drivers\spacedeskKtmInputMouse.sys
Windows\System32\drivers\spacedeskKtmInputKeybd.sys
Windows\System32\spacedeskHookUmode.dll
Windows\System32\spacedeskService.exe
Windows\System32\spacedeskServiceTray.exe

For Windows 7 only:

Windows\System32\drivers\spacedeskAuxiliary.sys
Windows\System32\spacedeskAuxiliary.dll

Files on 64 bit systems only

Windows\SysWOW64\ spacedeskHookUmode.dll

Release Notes

1. Refined spacedesk server state and TDR recovery.
2. Bugfix for screen corruption in spacedesk Windows viewer app.
3. spacedesk iOS VIEWER Beta v1.0 released.

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