



eVisit (Videoconference)

Technical Readiness

The computer on which you use eVisit (Videoconference) must meet minimum system requirements. Use this document to help you determine whether your personal computer and Internet connection meet these requirements.

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For further assistance and technical support, contact OTN Technical Support:

Phone: 1-855-654-0888 (option 2) **Email:** techsupport@otn.ca



1 Read This! What You Need to Succeed

Is your computer powerful enough? Does it have the power?

- You need a PC or a Mac with [recommended system specifications](#).
- Always plug in your laptop or notebook computer to a power source for best video quality.
- See [Verifying Your Computer Operating System Version and Hardware on page 5](#) and [Checking a Laptop's Power Plan](#) on page 7.



Audio & video devices - the right stuff!

- A speakerphone with 'echo cancellation' or a headset is mandatory.
- Your camera should support 'high definition' (HD) video quality.
- See [Recommended Web Cameras and Peripherals](#) on page 4.
- Ensure you have the most up-to-date drivers for your camera, speakers & microphone.

Do you have the right connections?

- When using a wired connection, you need a high-speed Internet service.
- When using a wireless connection, you need Wi-Fi or 4G-LTE service.
- Using a PC or Mac computer, you must successfully pass OTN's Internet connectivity tests at networktest.otn.ca. (See [Recommended Network Bandwidth](#) on page 8 and [Recommended Firewall Configuration](#) on page 11.)
- Using a tablet device, at the location where you're using the service, you should successfully run a test using the Speedtest.net app.



2 Recommended Computer Hardware and Operating System

Supported Operating Systems

Ensure your computer has installed and applied the most up-to-date system updates and patches.



Windows

- Windows 7, Windows 8¹, Windows 10
- Windows 8¹ Pro on a tablet device



Mac

- Mac® OS X 10.8 - 10.11.6²
- macOS™ Sierra 10.12

Notes:

- Virtualized environments (e.g., Citrix) are not supported.

Other Hardware and Software Requirements

Web browsers: Internet Explorer® 11
Safari® 9+

Video card with 1024 x 768 resolution support
256 MB memory or higher

USB ports with version 2.0 support

Sound card with support for stereo sound

Plugins: Java 7.0 or higher
For PCs, DirectX 11.0 or higher

Windows PC Recommended Configuration

- Core 2 Duo 2GHz
- 2 GB RAM
- 40 MB free disk space

Internet Connectivity

Minimum speeds: Upload 768 Kbps - 1 Mbps per call
Download 5 Mbps

The minimum required bandwidth is 768k, but a videoconference can use up to 1 Mbps **per call** – in both directions (upstream and downstream). If your bandwidth is low, calls will either be lowered in quality or may not work at all. (See [Bandwidth Test Results](#) on page 10.)

Wired connections require a high-speed Internet service

Wireless connections require Wi-Fi or 4G-LTE service.

¹ Windows 8 in 'desktop' mode (*i.e.*, do not use eVisit (Videoconference) in Tile/Start mode).

² For instructions about checking your Mac OS, see [Displaying System Information](#) on page 5.

3 Recommended Web Cameras and Peripherals

The eVisit (Videoconference) service affords tremendous flexibility in terms of the web cameras, speakerphones and headsets you can choose from. However, not all devices provide the same level of performance. The following table provides the information you need to help you determine which web cameras, speakerphones and headsets to use.

This is not a comprehensive list or a review of available devices, but rather a sampling of devices that OTN has sufficient experience with to provide a qualified recommendation in the context of the eVisit (Videoconference) service. If you have a device that is not on this list, you may experiment with it, but one of the recommended options is preferable.



Important Tips

1. To ensure adequate sound quality, you must use a speakerphone with 'echo-cancellation' or a headset.
2. The cameras and built-in speakers and microphone in most personal computers are not good enough for clinical videoconferencing. (Built-in speakers and microphones cause audio feedback and echo.)
3. Ensure that all of your devices have the most up-to-date manufacturers' drivers installed.

Web Cameras

Logitech HD Pro Webcam C920	HD Pro Webcam C920 is the consumer HD webcam from the Logitech HD Pro Webcam family. The camera can encode 720p 30 fps or 1080p 15 fps HD quality video. Note: This webcam is only for Windows-based computers.
Logitech HD Webcam C615	Logitech webcam that can be used by either Windows or Mac computers.

Headsets

Logitech USB Headset H540	This product performs well.
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Echo cancelling Speakerphones

Jabra Speak 410	This product performs very well. It has good acoustic echo cancellation and noise suppression.
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Other Equipment

Good lighting is also important. For better lighting, use a desk lamp to augment overhead lighting.



4 Verifying Your Computer Operating System Version and Hardware

4.1 Displaying System Information

For information about your computer's operating system, use Windows's **System Information** or Mac's **System Report**.

This will tell you the operating system's version number and other information about your computer. Review this information to ensure that you have the most up-to-date system updates and patches installed.

Windows 7

1. To open System Information, click **Start**, select **All Programs**, then **Accessories** and then click **Run**.
2. In the **Open** text field, type **msinfo32** . A System Information window appears.

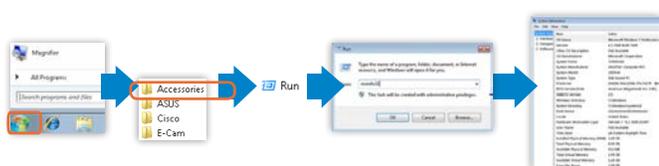


Figure 1: Windows 7 system information

Windows 10

1. In the Windows search box at the bottom left of your screen, type **System Information**.
2. Select the **System Information (Desktop app)** . A System Information window appears.

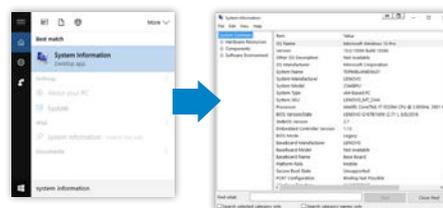


Figure 2: Windows 10 system information

Mac OS X

1. To open the System Information (or System Profiler), click the **Apple button** () in the top left of the Mac's screen and select **About This Mac**. A System Information window appears. The version number appears underneath the OS X or MacOS title.
2. To view the 'build' number, click the **Version number**.
3. To view more information about your Mac, click the **System Report** (or More Info) button.

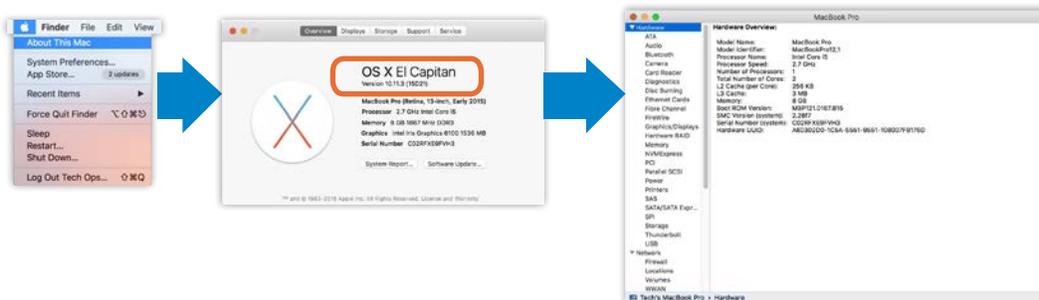


Figure 3: Mac OS X System Report

4.2

Checking the Sound Card, Video Card, and USB Ports

Windows

For information about your computer's hardware, use Windows's **Device Manager**.

Windows 7 or 8

- To open Device Manager, click the **Start** button and select **Control Panel**.
 - If Control Panel is in 'category' view, click **System and Maintenance** (or **System and Security** depending on which Windows system you have) and then click **Device Manager** (🔧) under the System topic.
 - If Control Panel is in 'icon' view, click **System** and then click **Device Manager** (🔧) in the left **Control Panel Home** section.
- Select a component in the list. For example, click "Display adapters" to see which graphic cards are used.

Windows 10

- In the Windows search box at the bottom left of your screen, type **Device Manager**.
- Select the **Device Manager (Control panel)**. A Device Manager window appears.

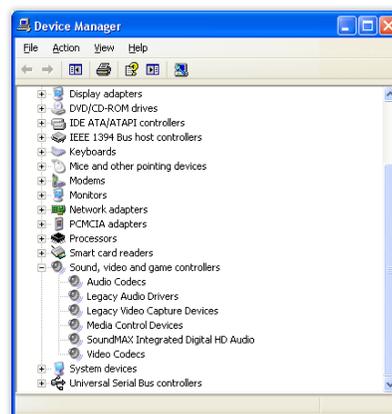


Figure 4: Windows Device Manager

Mac OS X

The Mac's **System Report** (or System Profiler) is where you can find information about your Mac's hardware and software installed, operating system, how much memory is installed, and what peripheral devices are connected.

- To open the System Information (or System Profiler), click the **Apple button** (🍏) in the top left of the Mac's screen and select **About This Mac**.
- To view more information about your Mac, click the **System Report** (or More Info) button.
- Select a component in the Contents panel on the left. For example, click "Graphics/Displays" to see which graphic card is used, the display resolution, etc.

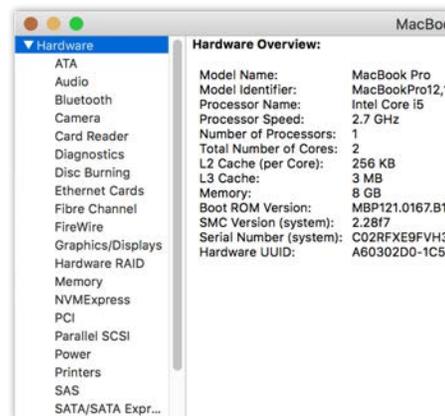


Figure 5: Mac OS X system information

4.3

Checking a Laptop's Power Plan

When using a laptop, plug it in to a power source while videoconferencing. If you have to use battery power, ensure that the laptop power plan/performance setting is set to “high performance”.

Note: The following instructions show just one example of how to access power options (for each operating system). There are alternative ways to access power options. If you usually use a different method, continue to do it your own way.

Windows 7

1. Click the **Start** button and select **Control Panel**,
2. In the search box, type power options, and then click **Power Options**.
3. Under **Select a power plan**, click **Show additional plans**, and then click **High performance**.

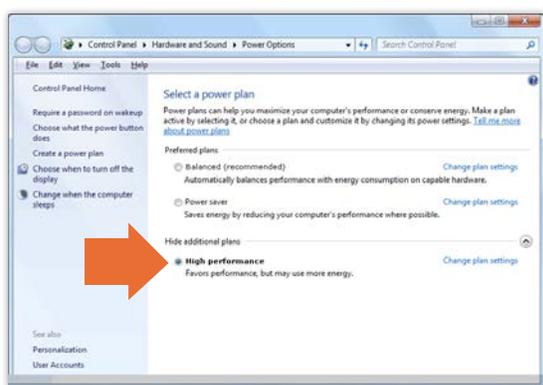


Figure 6: Windows power plan

Mac OS X

The latest Mac OS X operating systems automatically manage power and you cannot change the settings.

However, if you use an earlier Mac OS X you can set the following **Energy Saver** preferences:

1. To open **Energy Saver**
 - i. Click **Apple menu**.
 - ii. Select **System Preferences**.
 - iii. Select **Energy Saver**.
2. To ensure the brightest display, turn off the checkbox labeled “**Reduce the brightness of the built-in display when using this power source.**”
3. To ensure that your computer works fast, select “**Highest**” from the **Processor Performance** pop-up menu.

Windows 8

1. To view the ‘**charms**’ side panel, swipe in from the right edge of the screen. (Or if you’re using a mouse, point to the upper-right corner of the screen, move the mouse pointer down).
2. In the Search Panel, tap/click **Apps** to select it (if it isn’t already highlighted).
3. Type ‘control panel’ in the search box.
4. In the **Apps Results** screen, tap/click **Control Panel**.
5. In Control Panel’s search box, type ‘power’.
6. In the search results, tap **Choose or customize a power plan**.
7. Select **High Performance**.

5 Recommended Network Bandwidth

The eVisit (Videoconference) service enables you to easily participate in secure, good-quality videoconferences using your personal computer. Whether you work in a small clinic, at a hospital or at home, you can participate in clinical, educational or administrative events by accessing the service over an appropriate Internet or an eHealth Ontario circuit.

If you are unfamiliar with your network and its bandwidth capacity, contact your Internet Service Provider or network support staff for information or to investigate the quality of your network connection.

5.1 Bandwidth Considerations

For PC and Mac computers, you can use:

- A wired connection with a high-speed DSL connection. If your videoconferencing is mission critical, we recommend an even more reliable business class service such as T1, T3, OC-3 or Gigabit Ethernet.
- A Wi-Fi or 4G-LTE wireless connection.

For tablet devices, you can use a Wi-Fi or 4G-LTE wireless connection. For bandwidth testing of a mobile device, you can use the speedtest.net app.

It is also important to consider backup plans that enable connectivity to the OTN network.

There are several factors to consider when evaluating how much bandwidth you or your service organization should invest in, and the decision may vary from one location to the next.

The minimum required bandwidth is 768k, but a videoconference can use up to 1 Mbps **per call** – in both directions (upstream and downstream). If your bandwidth is low, calls will either be lowered in quality or may not work at all. (See [Bandwidth Test Results](#) on page 10.)

If your site expects multiple concurrent videoconferences, you need to calculate your bandwidth requirements. That is, multiply the expected number of concurrent calls times 1 Mbps and also account for any other activity that might use bandwidth. (See *Factors affecting data consumption* below.)

Data Consumption

On average, eVisit (Videoconference) uses the following bandwidth for a 15 minute videoconference.

Videoconference Type (duration: 15 minutes)	Usage (MB)
Person-to-person direct	400 - 500
Person-to-person bridged ³	1000
Tablet device to room-based system over Wi-Fi	75 - 100

Note: The above usage examples are estimates based on averages and could vary.

Actual data usage will vary and the above examples are intended to be used as guidelines only.

Factors affecting data consumption can include:

- Screen sharing during the videoconference (e.g., PowerPoint slides or other content).
- Other applications or services using the Internet connection (e.g., email, peer-to-peer networking).

³ A bridged videoconference is one that requires the use of an OTN multi-point control unit. For example, if it is set to automatically start or involves more than 2 systems.



5.2 Testing Network Bandwidth

OTN's connectivity test can help you determine the quality of the network connection to your personal computer and how well it will work for videoconferencing.

During this test the OTN server measures various components of your network connection, including latency, jitter, and speed. (For an explanation about these terms, see [Bandwidth Test Results](#) on page 10.)

Note: This bandwidth test is for PC and Mac computers that use browsers Internet Explorer or Safari. (For mobile devices, use the [speedtest.net](#) app.) Chrome and Firefox 52+ browsers are not supported.



To run these tests, you need the latest **Java installed and enabled** in your browser. For information and instructions about Java, visit the [Java Help Center](#).

1. To access the test, open a browser and go to [networktest.otn.ca](#).

The **OTN Connectivity Tool** web site appears (Figure 7).

2. To start the test, click **Videoconferencing Connection Readiness Tests**. A Quality Test Suite - Videoconferencing Connection Readiness Tests screen appears and the tests begin.
 - If a Java Security warning appears, click the button that allows you to accept and continue. For example, click **Run, Accept, Yes, or I accept...**
 - If a message appears saying, “**Your Java version is out of date.**” click the option “**Update (recommended)**”.
 - If a popup appears with a message “**Applet still loading...**”, you have not enabled or not installed Java in your browser. For help, refer to [Java's browser instructions](#) or [Java's installing instructions](#).
 - If an error message appears about “Application Blocked by Security Settings”, you need to add the *networktest* URL to an exception list. See [Java Control Panel Security Settings](#) on page 17.

3. Review the test results.

The bandwidth tests are the first three sections with the titles:

- UDP Latency & Jitter
- TCP Latency & Jitter
- UDP Speed Test

The network ports and firewall test are the last three sections. See [Testing Your Network Ports](#) on page 13 and [Recommended Firewall Configuration](#) on page 11.

A successful test appears with a green checkmark (✓).

If a problem was found, a red X (✗) appears.

See [Bandwidth Test Results](#) on the next page.

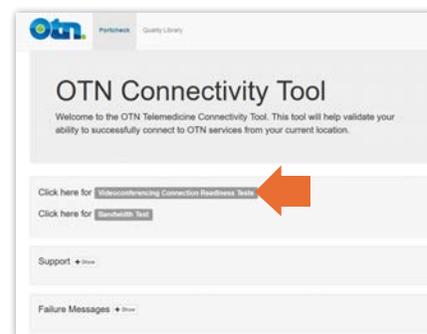


Figure 7: Connectivity Tool

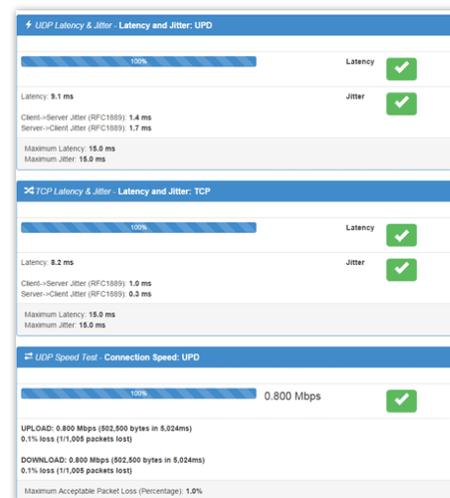


Figure 8: Successful bandwidth tests



Bandwidth Test Results

Test Result Message	Explanation and Recommended Actions
 All green checkmarks.	Everything looks good for videoconferencing. You can start videoconferencing.
 More green checkmarks than red X's.	One or more of the tests had marginal results. The quality of your network connection is less than ideal. You may experience quality problems with your Telemedicine events. Recommended Actions <ul style="list-style-type: none"> Try the test a few more times to see if the conditions are constant or if it was a temporary problem. Contact your Internet Service Provider or network support staff to investigate improving the quality of your network connection.
 More red X's than green checkmarks	Several components failed the test. Recommended Actions <ul style="list-style-type: none"> To generate a detailed report: <ol style="list-style-type: none"> Click  at the bottom of the results screen Type your email address and click . You will receive an email with all the results listed, which you can forward to your ISP or network support staff. Contact your Internet Service Provider or network support staff to investigate improving the quality of your network connection.

Bandwidth Test Descriptions

Test Type	Description and Success Criteria
Latency and Jitter	<p>Latency is an expression of how much time it takes for data (such as a video signal) to get from one point to another point on a network. Latency is also called lag or delay.</p> <p>Jitter is the variation in the time for data to arrive; it can be thought of as shaky pulses.</p> <p>This test measures the round trip time for sample data sent from your personal computer to OTN's server. Good test results are a low latency and minimum jitter.</p> <p>Latency and jitter can cause video signals to flicker or introduce clicks or other undesired effects in audio signals.</p>
Speed Test	<p>Download Test: To estimate the connection speed, small binary files are downloaded from OTN's server to your personal computer.</p> <p>Upload Test: To estimate the connection speed, a small amount of random data is generated from your personal computer and sent to OTN's server.</p> <p>The speed test also checks for Packet loss, which is often caused when a network device is overloaded and cannot accept additional data at a given moment.</p> <p>Packet loss can cause broken-up images, unintelligible speech, or even the complete absence of a received signal.</p>



6 Recommended Firewall Configuration

If you are connecting from a personal computer that is behind a corporate firewall, there are two ways to navigate through it. The better option, which enables a better quality videoconference, is to ask your IT network administrator to open up the needed ports through the firewall (see [Firewall Openings](#) below). If this is not possible, you can try proxy tunneling (see [Alternative Proxy Tunneling Over TCP Port 443](#) on page 12).

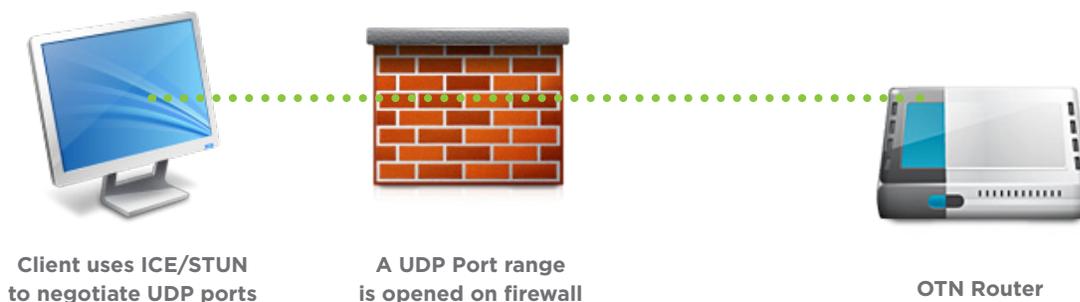
If you do not know whether your personal computer is behind a firewall, for instructions on how to check for a firewall, see [Testing Your Network Ports](#) on page 13.

6.1 Firewall Openings

If you are connecting from a personal computer that is behind a corporate firewall, the following ports should be opened:

- TCP Port 443 Secure Web Access to OTN's Portal Application Server
- TCP Port 17992 EMCP protocol Client Connection to OTN's Portal Application Server
- TCP Port 17990 SCIP protocol Client Connection to OTN's videoconferencing service router
- UDP 50,000-53,000 RTP/SRTP media - Inbound/outbound Media feeds to participants (6 ports per participant) to OTN's videoconferencing service route

The ports have to be opened in both directions to OTN's IP Address range 66.199.46.0 / 24.



At this time the eVisit (Videoconference) service opens all UDP ports dynamically based on STUN communication between Client and Server so there is no need to open specific UDP ports on the firewall—as long as ports in the UDP range provided above can be dynamically opened.



Some firewalls have a default UDP time out. For example, on the Cisco PIX Firewall, the UDP time out is two minutes. If this is not changed then the call will drop in exactly two minutes and you will need to reconnect. Contact your network administrator to check this setting and if necessary increase the time out.

6.2 Alternative Proxy Tunneling Over TCP Port 443

If your IT Network Security Team is not able to open up the above firewall ports, proxy tunneling will be automatically enabled. This allows the client and server to tunnel the media over TCP port 443. Please note that tunneling can reduce the overall quality of the videoconferencing experience.

If you want to set the eVisit (Videoconference) plugin to use proxy tunneling, go to the **OTNhub Services** feature, under **Videoconference Settings**, in the **Video Network Settings** section. For instructions, see [Setting Your eVisit \(Videoconference\) Options](#), which is available from [Self Service Help](#).



6.3 Software Firewalls

Occasionally an Internet Service Provider (ISP) provides an “Internet protection” program (software firewall) with their service. This might allow you to pass the network port test, but might block the connection between the video software and eVisit (Videoconference).

If you pass the network port test, successfully log in to otnhub.ca and access the **Videoconference** service, but cannot connect and make a video call, check if you have a software firewall running. If yes, close the software firewall and try connecting again.

6.4 Testing Your Network Ports

To verify that your personal computer will be able to successfully videoconference over the Internet, OTN has a connectivity tool that includes tests to check if your connection is ‘free and clear’ of an intervening device like a firewall that can block outbound communications.

Note: If you use eVisit (Videoconference) on a hospital or office network, you might need to contact your network administrator to check your network settings. For example, this test requires that your network have Port 80 open and for best results the ports identified in [Firewall Openings](#) on page 11 should be open.



To run these tests, you need the latest **Java installed and enabled** in your browser. For information and instructions about Java, visit the [Java Help Center](#).

1. To access the test tool, open a browser and go to networktest.otn.ca. The **OTN Connectivity Tool** web site appears (Figure 9).

2. To start the test, click **Videoconferencing Connection Readiness Tests**. A Quality Test Suite - Videoconferencing Connection Readiness Tests screen appears and the tests begin.

- If a Java Security warning appears, click the button that allows you to accept and continue. For example, click **Run, Accept, Yes, or I accept...**
- If a message appears saying, “**Your Java version is out of date.**” click the option “**Update (recommended)**”.
- If a popup appears with a message “**Applet still loading...**”, you have not enabled or not installed Java in your browser. For help, refer to [Java’s browser instructions](#) or [Java’s installing instructions](#).
- If an error message appears about “Application Blocked by Security Settings”, you need to add the bandwidth URL to an exception list. See [Java Control Panel Security Settings](#) on page 17.

3. Review the test results.

The bandwidth tests are the last four sections:

- Port Check Test: pcvr.video.otn.ca
- Port Check Test: router1.video.otn.ca
- Firewall Test: UDP
- Firewall Test: TCP

4. A successful test appears with a green checkmark (✓).

If a problem was found, a red X (✗) appears. Contact your Internet Service Provider or network support staff to investigate and possibly open the port(s).

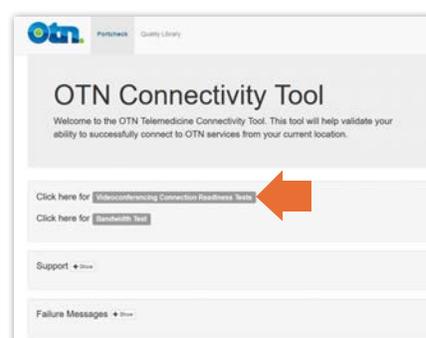


Figure 9: Connectivity tool web site

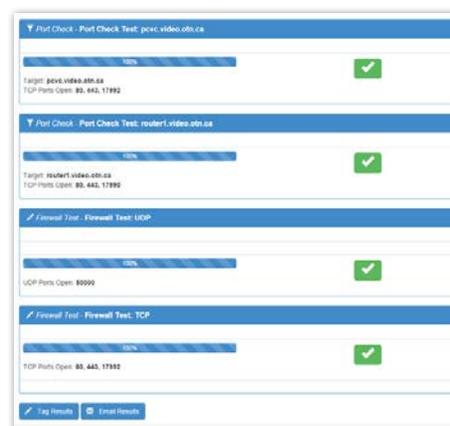


Figure 10: Port test successful



7 Configuring Trusted Sites and Proxy Settings

In addition, depending on the version of Java installed on your computer, you might need to edit Java's exception list.

7.1 Windows Internet Explorer Security Settings

There are three domains you need to set as 'trusted' to ensure that you can access the ONE ID login function (federation.ehealthontario.ca), the OTNhub (otnhub.ca) and general otn (otn.ca) domains.

If you will use an Internet Explorer browser, OTN recommends that you add the domains to your browser's list of trusted sites.

1. Open **Internet Explorer**. (While open, if the browser **Menu Bar** is not visible, press the **Alt** button on the keyboard to view it.)
2. In the Menu Bar click **Tools** and then select **Internet Options**.
3. In the **Internet Options** dialog box, click the **Security** tab.
4. Click **Trusted Sites** in the "Select a zone..." panel.
5. Click the Sites button.
6. In the Trusted Sites dialog box:
 - i. Type `https://*.otnhub.ca` in the "Add this website..." field and then click the **Add** button.
 - ii. Type `https://*.otn.ca` in the "Add this website..." field and then click the **Add** button.
 - iii. Type `https://*.federation.ehealthontario.ca` in the "Add this website..." field and then click the **Add** button.
7. To apply the settings and close the dialog box, click **Close**.
8. To close the **Internet Options** dialog box, click **OK**.
9. Restart (close and re-open) the browser.

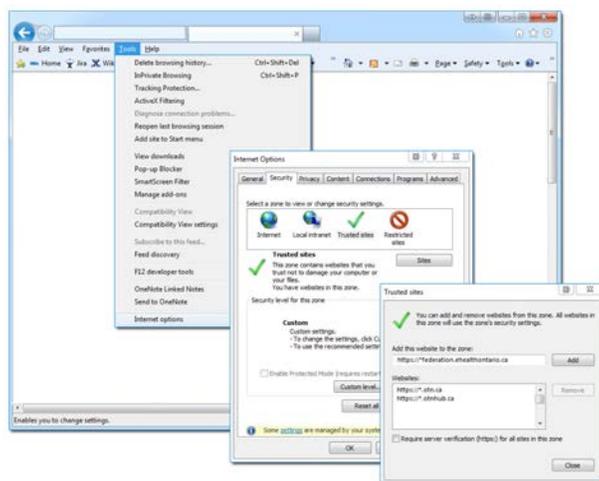


Figure 11: IE security settings

7.2 Mac Proxy Settings

If you use a Mac on a hospital or corporate network, there might be a proxy server in place.

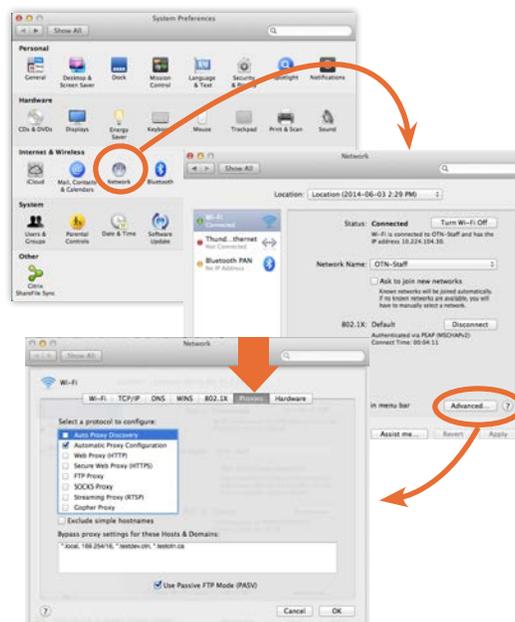
OTN recommends that the network proxy settings are explicitly set (that is, don't use the automatic proxy discovery).

Contact your IT or Network administrator and have them check your Mac's proxy settings.

Safari uses the Mac's network settings.

To view your Mac's proxy settings, do the following:

1. Open **System Preferences** ().
2. In the System Preferences window (in the Internet & Wireless group), click **Network**.
3. In the Network window, (at the bottom), click the **Advanced** button.
4. Click the **Proxies** tab.

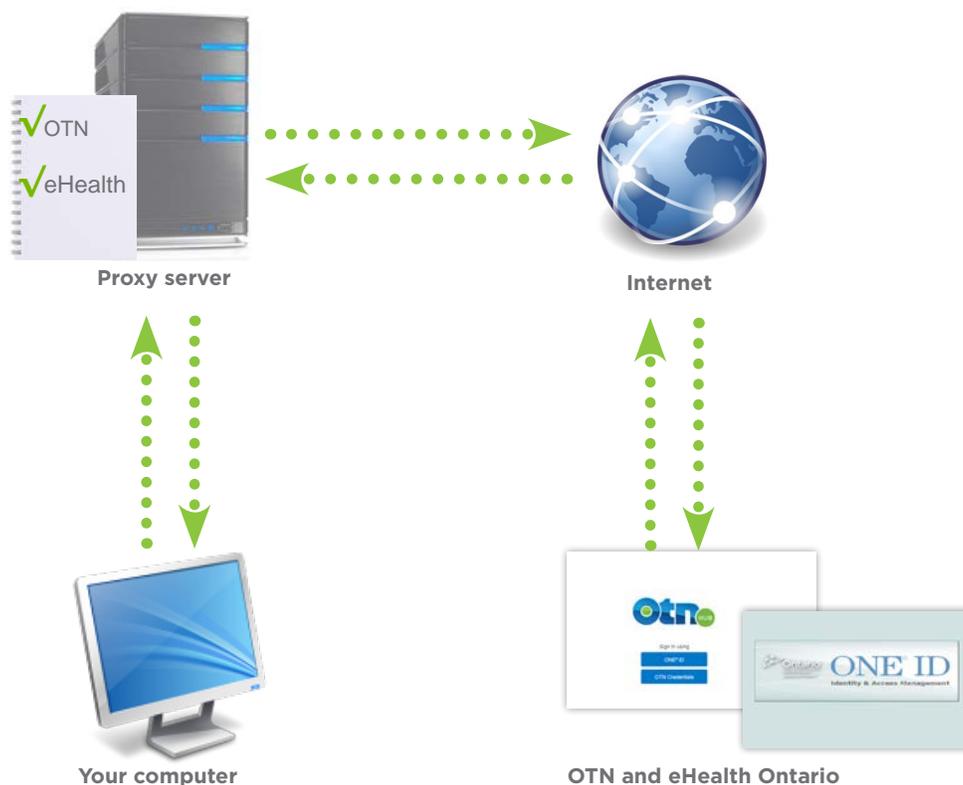


7.3

Network Proxy Server 'Whitelist' Settings

If you will use your personal computer or tablet on a hospital or corporate network, there might be a proxy server in place. Contact your IT or Network administrator and ask them to set the proxy server to allow access to both:

- The OTNhub and OTN domains (otnhub.ca and *.otn.ca) and
- The eHealth Ontario domain (*.ehealthontario.ca or *.ehealthontario.*).



7.4 Java Control Panel Security Settings

If you have Java 7 Update 51 or higher on your computer, due to its enhanced security features you need to add specific URLs to its exceptions list (e.g., networktest.otn.ca).

If you do not add these sites to the exceptions list, when you try to run a test you might receive an error message (Figure 12) such as:

- Application Blocked by Security Settings.
- Test cannot be completed. The Java portion of the test could not be started.
- Missing Application-Name manifest attribute.
- Missing required Permissions manifest attribute in main jar.

1. To access the **Windows Control Panel**:
 - For Windows 7, click the **Windows Start** button in the lower left corner of your screen and select **Control Panel**.
 - For *Windows 8*, instructions to access the **Control Panel** are at windows.microsoft.com/en-US/windows-8/where-is-control-panel.

2. In the search box, type **Java Control Panel** and in the search results click the **Java** icon (Figure 13).

The Java panel opens (Figure 14).

3. Click the **Security** tab.
4. Select the option **Enable Java content in the browser**.
5. Click the **Edit Site List** button.

An Exception Site List dialog box appears.

Continued on next page...



Figure 12: Java security warnings

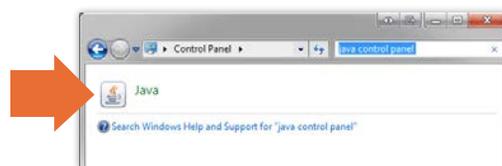


Figure 13: Java in Windows control panel

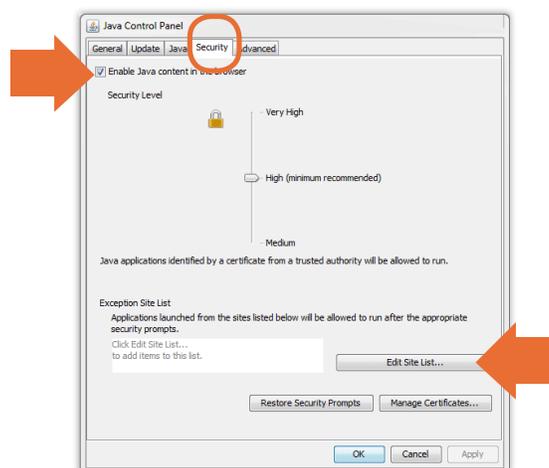


Figure 14: Java control panel

- Click **Add** in the Exception Site List dialog box.

A Location field appears (Figure 16).

- Click in the empty field under the **Location** title, type `http://networktest.otn.ca` in the field and click **OK**.

A Security Warning dialog box appears (Figure 17).

- To close the warning, click **Continue**.

The Java Control Panel now displays the added URL in its Exception Site List (Figure 18).

- To confirm the changes and close the Java Control Panel, click **OK**.

- Restart (close and reopen) any open browser windows to enable the changes.

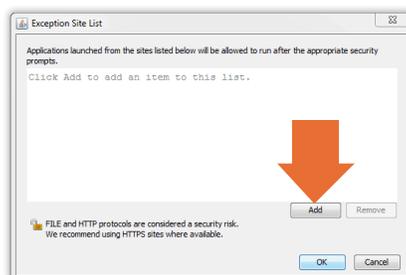


Figure 15: Exception Site List dialog box

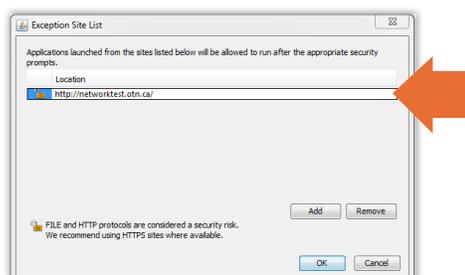


Figure 16: Location field



Figure 17: Warning message with Continue

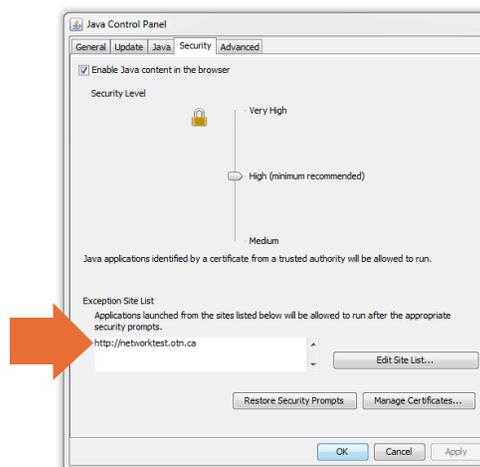


Figure 18: Java control panel with exceptions listed