



BTC over Internet

Access testing tool customer support guide

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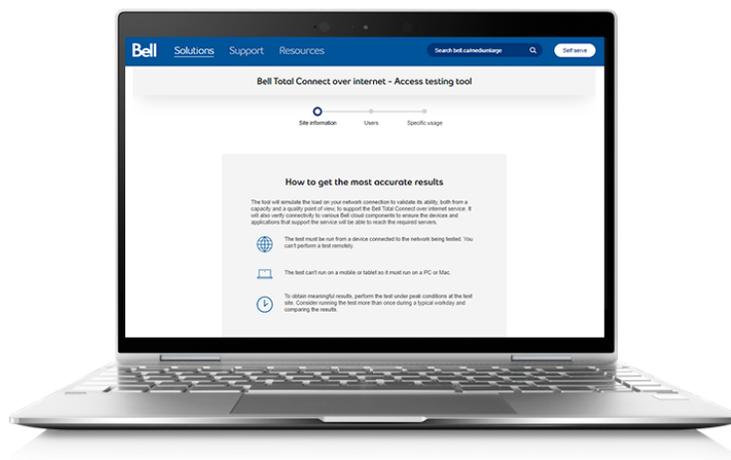
This document provides an overview, instructions and detailed support information on how to use the Bell Total Connect (BTC) over Internet – Access testing tool (ATT).

1. Introduction

Internet connections have improved in quality, bandwidth and availability over time, which has enabled Unified Communication (UC) services like BTC to reliably serve more locations, smaller offices and the growing teleworker community. Since the Internet is not as robust as private networks that support features like Quality of Service (QoS), it is important to assess your Internet connection prior to implementing an Internet telephone service. This will ensure a high quality experience. Bell has developed the easy to use Bell Total Connect over Internet – Access testing tool to test the capacity and quality of your network.

1.1 What is the Bell Total Connect over Internet – Access testing tool (ATT)?

The ATT has two roles. The first is to evaluate and identify potential issues on a customer's Internet access prior to subscribing to BTC over Internet. The second is to provide insight into why the customer is having connectivity or quality issues after the service is set up.



The ATT will evaluate three key areas:

1. Capacity – Identifies how many connections can run at the same time and validates upload and download speed. Calculates the required bandwidth based on customer input.
2. Quality – Provides insight into what call quality the customer can expect.
3. Accessibility – Confirms soft clients and Internet Protocol (IP) devices can connect and communicate with BTC:
 - Firewall ports open to communicate with supported IP hardware devices and BTC voice applications
 - Media, soft clients, Webex etc.
 - Routes common to all hardware

The tool will simulate the load on your network connection to validate its capacity and quality. It will also verify connectivity to various Bell cloud components to ensure the devices and applications that support the service will be able to reach the required servers.

1.2 When to run the ATT

It is mandatory that the ATT is run prior to ordering BTC service installation. This will ensure you have a high-quality experience when the service is implemented. Otherwise, issues may surface during BTC installation or later, once the service is in place. Also, the ATT should be run anytime there is a planned change to the site. This includes additions of PCs, servers or phones.

Considerations when running an access assessment:

- The PC running the access assessment should be connected to the Local Area Network (LAN) via an Ethernet cable
- Proxy and VPN should not be used for the test, as this may cause issues. If proxy, firewall or VPN is mandatory, please refer to the **Troubleshooting section** and check with your IT administrator
- If you are adding multiple PC-based users, please ensure you account for any additional PC usage beyond voice traffic, as some application usage can be significant

It is important that you run the assessment on the same LAN that you intend to use to provide voice services. You should run the test from the area on the LAN where users are planning to connect. The test should be run at least three times throughout the busiest times of the day. This will provide Internet access feedback throughout the day. You will then be able to send the lowest passing assessment report to your Bell representative.

The tool will also provide valuable troubleshooting information if you experience issues once your BTC service is up and running.

1.3 Testing scenarios

Several testing scenarios could exist and should align with your current setup to ensure complete and accurate testing. Here are some potential scenarios:

Simple: You have a single LAN serving all users and devices at the location. For this scenario, the assessment should be completed at a central spot where users will be located.

Complex: You have several virtual LANs (VLANs) serving the site. The most common is a data VLAN that serves PCs and servers and a voice VLAN that serves IP telephony devices. For this scenario, the same approach applies. Testing on the data VLAN should be completed where users are located. Voice VLAN testing will require a supported browser connected to the voice VLAN.

1.4 How to run the ATT

Basic requirements to run the ATT are:

- Current model business grade PC or Mac
- Current version browser. The ATT will operate best on the latest in-market browser.
 - Supports macOS 10.14+ – Safari
 - Supports Windows 8+ – Chrome, Firefox and Edge

To start, access the ATT on Bell.ca:

- English: <https://business.bell.ca/Shop/medium-large/total-connect-Internet-access-assessment-tool>
- French: <https://entreprise.bell.ca/magasiner/moyennes-grandes/outil-evaluation-acces-Internet-bell-connexion-totale>

1.5 Steps to complete an assessment

1. Enter information to identify the site for the assessment results.

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Bell Total Connect over internet - Access testing tool

Site information Users Specific usage

How to get the most accurate results

The tool will simulate the load on your network connection to validate its ability both from a capacity and a quality point of view to support the Bell Total Connect over internet service. It will also verify connectivity to various Bell cloud components to ensure the devices and applications that support the service will be able to reach the required servers.

- The test must be run from a device connected to the network being tested. You can't perform a test remotely.
- The test can't run on a mobile or tablet so it must run on a PC or Mac.
- To obtain meaningful results, perform the test under peak conditions at the test site. Consider running the test more than once during a typical workday and comparing the results.

About your company

*Company name

*Site name or address
Eg. Monnar Courson or 123 King St, Toronto

Next

2. Adjust assessment inputs to meet the needs of your site.
3. Select **Next** at the bottom of the screen.

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Site information Users Specific usage

Number of users and phone calls

The following questions will allow us to assess whether your internet connection and network can support the number of users and services that you require for this site. Please consider any expected growth in the near future in your answers.

What is the expected number of Bell Total Connect users at this site?

Important
If you have more than 500 users at this location please contact your account team.

What is the expected maximum number of users who will be on voice calls at the same time?

Please adjust this number depending on the nature of your business. A typical office environment could have up to 25% of the users on phone calls at the same time. However, a call centre will have up to 100% of the users on the phone.

Back Next

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4. Update the screen and video call users to meet your requirements.
5. Select **Start test** to start the assessment.

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Site information Users Specific usage

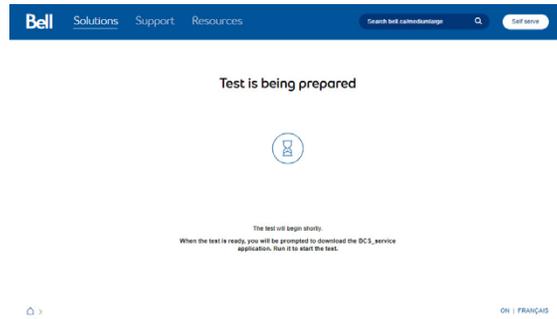
Screen sharing and video calls

What is the expected maximum number of users that will be participating in screen-sharing sessions?

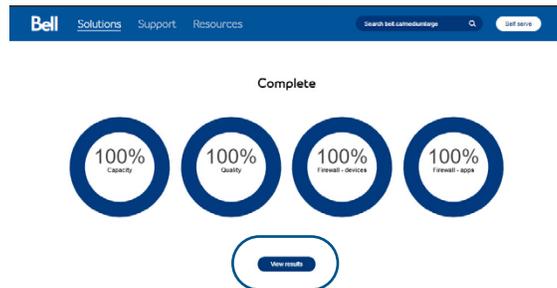
What is the expected maximum number of users that will be participating in Bell Total Connect video calls or video meetings at the same time?

Back Start test

6. A small application will be downloaded. It will run the assessment and will take a few minutes.



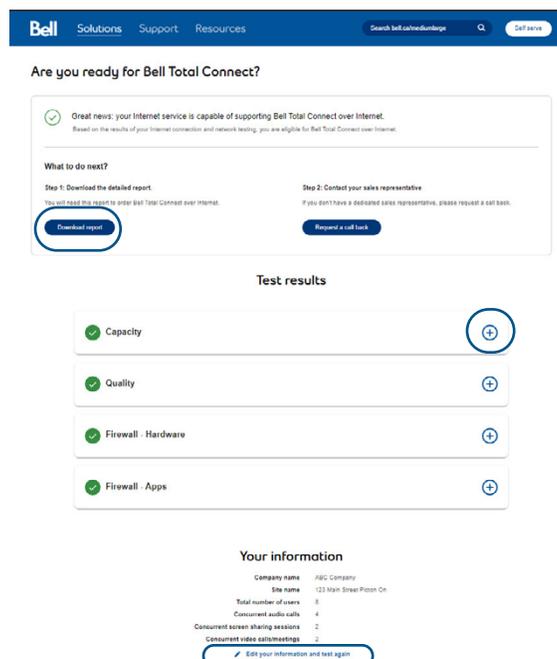
7. While the assessment is running, a graphic will indicate the assessment progress. When complete, a **View results** button will appear at the bottom of the graphic.



8. To download the detailed PDF assessment results, select **Download report**.

9. Results appear on screen for each category, which will be colour-coded (green: all good, yellow: marginal – review these for possible action, and red: issues that require attention). You can expand each category by selecting +. Hovering over the sub-category displays a description.

10. Click on **Your information** to display the parameters that were used for the current assessment. To rerun the test, select **Edit your information and run the test again**. This will take you back to the start of the assessment where you have the option to modify the parameters and run the test again.



2. Overview of access assessment tests

This section will provide detailed information on the tests performed by the ATT and the results delivered. Descriptions of the acronyms used in this section are located in the Glossary at the end of the document.

2.1 Line capacity test

The line capacity test measures the maximum connection capacity without the inherent overhead of TCP. The test is performed over a UDP connection and reports the maximum download and upload data transfer rates in conjunction with the packet to data ratios.

A note on the bandwidth assessment:

The BTC ATT utilizes a small packet size that is more reflective of VoIP traffic and assesses steady state speeds instead of peak measurements that are usually used in online speed tests. This approach assures a test with real-life VoIP traffic to obtain a realistic Internet pipe capacity for VoIP.

2.2 Quality test

The quality test assesses the jitter and packet loss for a connection at any given time and also provides details on session initiated protocol (SIP) responses, SIP application layer gateway (ALG) and mean opinion score (MOS) scores.

2.3 Firewall test

The firewall test assesses whether or not certain routes/ports are open or closed. This can be very useful for identifying applications or services that require specific ports to be open.

3. Troubleshooting and frequently asked questions

3.1 ATT client issues

Issue	Reason	Steps to resolve
The following error message appears on the webpage: “The test is taking longer than normal to respond which could indicate a problem. Please try again.”	Communication issue Firewall, proxy or VPN blocking communication	Could be a communication issue. A brief drop in connectivity could be the reason. Refresh the page and try again. If you have a firewall, proxy or VPN, please try the application outside of the closed environment. If successful, please work with your local IT administrator to make sure the bcs.exe and NetQCheckHTML5Agent.exe are in the allowed list (these files are used in the access assessment). Each firewall, proxy or VPN is different, so check with your IT administrator or provider on how to do this best, if required. *Additional info below. Update your browser to the latest available version of Chrome, Firefox, Edge or Safari.
The test stops intermittently	Communication issue	Check your Internet connection. Refresh the test page and try the test again.
The test completed with no test results or updates	Communication issue	Refresh the test page and try the test again.
The test portal page is not loading	Communication issue	Check your Internet connection. Check the SSL Certificate and make sure that there are no errors. Try refreshing the test page. Check that your firewall allows access to the ATT URL on Bell.ca. English: https://business.bell.ca/Shop/medium-large/total-connect-Internet-access-assessment-tool French: https://entreprise.bell.ca/magasiner/moyennes-grandes/outil-evaluation-acces-Internet-bell-connexion-totale

*Additional info:

If the ATT cannot be reached due to desktop issues, possible reasons for this could be:

- a. A proxy is configured: bcs.visualware.com actually resolves to 127.0.0.1, i.e., localhost. If a proxy is configured within the OS (Chrome, Edge, Safari) or within the browser (Firefox), then that hostname can be resolved by the external proxy in your environment. There is probably no way for that request for localhost to get back to the workstation at that point. Potential solution: add bcs.visualware.com to the exception list for the proxy.
- b. Unique security configuration or software may be restricting access to the port on the local system with bcs.visualware.com resolving to the local system (127.0.0.1). Security software may identify this communication as a potential threat. Configuration is software-dependent, but antivirus/endpoint protection such as Symantec and Windows Defender (local Windows firewall) are both potential culprits. Temporarily disabling these measures (one at a time) may support troubleshooting efforts but may require your IT administrator’s support. If temporarily disabling the software does solve the problem, the next step is to configure the offending software to allow the inbound access on the specified port (32660).

3.2 Frequently asked questions

Question	Answer
Can I install the application as a non-admin user?	<p>Yes. By default, the installer will put the required files on the desktop. Simply run the bcs.exe by double clicking on it. A pop-up should appear stating that it is running in the background. Once that message appears, go back to the test site. The test should have loaded now. If not, refresh the page.</p> <p>Recommendation: install the application as an admin user installing Client as Admin-User.</p>
Why do I need to download the BCS client?	<p>Purely browser-based tests are inherently inaccurate. The client was developed not only to greatly improve test accuracy, but also to open up an entire suite of tests. The required protocols to run voice over IP tests, capacity tests, bi-directional route tests and more are not available in purely browser-based tests. The client is a small, unobtrusive, yet hugely powerful application that brings a wide variety of accurate tests to the browser.</p>
How do I uninstall the BCS client?	<ol style="list-style-type: none">1. Uninstall procedure for Mac:<ol style="list-style-type: none">a. Drag the BCS directory in /Applications to the trash can.b. Go to /Library/LaunchDaemons and drag the visualware.com.bcs.plist file to the trash can. Note: it may be necessary to use the Finder's Go/Go to Folder (Shift-Command-G) to find this hidden folder.c. Restart the Mac.2. Uninstall area for Windows 10: Go to Programs and Features (Add or remove programs) if you're not using Windows 10) and uninstall the Visualware BCS application.
What ports does the client need for capacity, VoIP quality, and firewall tests?	<p>To perform the actual tests, the client communicates on the following ports:</p> <ul style="list-style-type: none">• Capacity tests: TCP 20000-20001 and UDP 8060• VoIP (quality) test: TCP 5060, UDP 20000-200001• Client connection points:<ul style="list-style-type: none">• natweb.totalconnect.bell.ca resolves to one of the 4 public IP address:<ul style="list-style-type: none">• 209.71.217.48, .49, .50, 51 over port 80 and 443 (HTTPS) <p>If you have a locked-down firewall, please check if these ports are blocked during the test.</p>

4. Glossary

Firewall is a network security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules.

Internet Protocol (IP) is the principal communications protocol in the Internet protocol suite for relaying datagrams across network boundaries. Its routing function enables internetworking, and essentially establishes the Internet.

Jitter measures variability over time of the network latency. In an ideal world, each packet would take exactly the same time to travel between the client and the server (0% jitter). In reality, this is seldom the case and packets' travel time to destination (latency) varies. Jitter is usually larger on a bad connection.

Local Area Network (LAN) is a computer network that interconnects computers within a limited area such as a residence, school, laboratory, university campus or office building.

Packet discards measures packets that arrive too late to be used by the application. Packets are very time-dependent when it comes to media-based applications. There is a time window when packets can be used after which it is too late and the packet has to be intentionally discarded when it arrives. It is similar to missing a connecting flight because the first flight was delayed and arrived after the second flight had taken off.

Packet loss measures how many packets did not reach the destination for any reason. It is expressed as a percentage of the total number of packets. Any packet loss is bad and affects the quality of applications.

Packet loss distribution measures the packet loss distribution across the timeline. If a test of 1000 packets loses 10 packets, then the packet loss is 1%. However, if 10 packets were lost in just one window of 100 packets, the loss will remain 1% (10 packets), but the distribution would be 10%. A high distribution percentage means that all packets got lost in a small window of time causing a bigger quality problem for the application.

Packet order measures how many packets arrived in order (expressed as a percentage). Packets do not necessarily take the same route or the same time to reach the destination. This results in packets arriving out of order which causes other packets to be delayed or even, in very bad cases, discarded. Delayed or discarded packets cause a quality problem for the application.

Proxy server is a server application or appliance that acts as an intermediary for requests from clients seeking resources from servers that provide those resources.

Mean opinion score (MOS) is a measure of voice call quality that was originally developed by phone companies. Software applications have adopted the MOS score and scale:

5 – Excellent: as if in a face-to-face conversation

4 – Good: small interference but the sound is still clear (e.g., cell phones)

3 – Fair: enough interference to be annoying

2 – Poor: very annoying and almost unusable

1 – Bad: unusable

Secure Sockets Layer (SSL) are cryptographic protocols designed to provide communications security over a computer network. Several versions of the protocols are widely used in applications such as email, instant messaging and voice over IP.

SIP ALG stands for Session Initiation Protocol - application layer gateway, and is common in many commercial routers. It intends to prevent some of the problems caused by router firewalls by inspecting VoIP traffic (packets) and modifying it if necessary.

Soft client, or soft phone, is an application that enables VoIP telephone calls from a computer, tablet or a mobile device.

Transmission Control Protocol (TCP) is one of the protocols of the Internet protocol suite. It originated in the initial network implementation in which it complemented the Internet Protocol (IP).

User Datagram Protocol (UDP) is one of the core members of the Internet protocol suite. With UDP, computer applications can send messages to other hosts on an Internet Protocol (IP) network.

Virtual Private Network (VPN) extends a private network across a public network and enables users to send and receive data across shared or public networks as if their computing devices were directly connected to the private network. Applications running across a VPN may therefore benefit from the functionality, security and management of the private network. Encryption is a common, although not an inherent, part of a VPN connection.

Virtual LAN (VLAN) VLANs work by applying tags to network frames and handling these tags in networking systems – creating the appearance and functionality of network traffic that is physically on a single network but acts as if it is split between separate networks. In this way, VLANs can keep network applications separate despite being connected to the same physical network and without requiring multiple sets of cabling and networking devices to be deployed.

Voice over Internet Protocol (VoIP), also called IP telephony, is a method and group of technologies for the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks, such as the Internet.