



SIP Trunking performance and service reporting

User guide

Bell

Welcome to SIP Trunking performance and service reporting

Bell SIP Trunking allows you to simplify your voice systems with a single SIP connection for all your IP communication needs. A scalable, flexible, two-way access solution, SIP Trunking includes performance and service reporting delivered via the Bell Business Self Serve Centre with near-real-time metrics and data. You can use the tool's dashboards to manage your SIP Trunking sites, and easily track call volume, usage, voice quality, SLAs, the status of tickets, and more. This guide will help you get started.

On behalf of the entire Bell team, we look forward to helping you do more and make more. If you have any questions, please do not hesitate to contact us.

Regards,

The SIP Trunking team

What's in this guide

1.	Getting started.....	2
2.	Navigating performance reporting.....	2
2.1.	Views.....	2
2.2.	Filtering.....	2
2.3.	Data extraction.....	3
2.4.	Usage statistics.....	3
2.4.1.	Call volume.....	3
2.4.2.	Peak usage.....	3
2.4.3.	Mean Opinion Score.....	3
2.4.4.	Call disconnect.....	4
2.5.	Call reports.....	4
3.	Service reports.....	4
3.1.	Scorecard.....	4
3.2.	Service availability.....	5
3.3.	Mean Time to Restore (MTTR).....	5
3.4.	Incident details.....	5
3.5.	Inventory report.....	5
4.	Support for reports.....	5
4.1.	Performance reporting.....	5
4.2.	Service reporting.....	5
5.	Bell Privacy Policy.....	6
	Appendix A – Network pathway and MOS.....	7
	Appendix B – Disconnect cause-codes.....	8

1. Getting started

To access reporting:

- a. Open Firefox, Chrome or Microsoft Edge. Note: Internet Explorer is not supported.
- b. Log in to the [Bell Business Portal](#). To reset your password at any time, select **Forgot your password?** on the login page and follow the prompts.
- c. In the vertical navigation menu under **Categories**, select **Ordering**, then select **Self Serve Centre**.
- d. The Self Serve Centre dashboard will appear in a new window. This page displays all service requests and inquiries you or other users from your organizations have submitted.
- e. Select **My Reports** from the menu.
 - i. To view usage statistics (volume, peak usage, voice quality, call details, etc.) select **Performance** from the drop-down menu.
 - ii. To get an inventory of features and services, and to see SLAs or the status of tickets, select **Service** from the drop-down menu.

To update your profile:

- a. When you log in for the first time, you will be prompted to update your profile.
- b. Please make sure to choose a security question in order to activate the 'Forgot your password' function.
- c. You can update your profile at any time by going to the Bell Business Portal home page, choosing **Online services** from the menu, and selecting **Change Profile**.

2. Navigating performance reporting

2.1. Views

From the **Performance** tab, choose the **Dashboards** menu located in the top left-hand corner. This vertical navigation menu contains a set of folders that correspond to your Bell products and services.

The current view will be highlighted in grey. To collapse or expand a section of the menu, use the arrow to the left of the folder name. You can toggle between different views in the Dashboards menu. To quickly search for a specific dashboard, enter keywords into the search bar.

Each dashboard displays tables, graphs and pie charts that provide a unique snapshot of your service metrics. You can hover over an element or select a specific item, if available, to open up the corresponding dashboard for that service or device. You can also focus on specific data in a line or bar graph by clicking and dragging the mouse to highlight the data you would like to zoom in on.

When you select the **SIP Trunk Usage** folder, a graph will appear, showing the call volume (number of inbound and outbound calls) for your 10 largest trunk groups.

2.2. Filtering

To filter and refine dashboards:

- a. Select the **filter** icon. The pop-up offers a search bar and several drop-down options.
- b. Once parameters have been selected, selecting **Apply** will filter the widgets accordingly. Parameters will appear to the right of the filter icon.
- c. If you want to remove parameters, select the **X** on the filter tag or **Clear all**.

Note: selected parameters will only apply to the dashboard currently being viewed. An error will occur if the applied filter parameters are not relevant to the current dashboard.

To filter by date, you can select the **calendar** icon and either:

- Select a common filter option under the **Quick** tab.
- Query specific date and time intervals in the **Customer date** tab ranging from 15 minutes to one year.
Note: exact to and from dates and times are required.
- Adjust the time range to your business hours.

The dashboard will automatically update once an interval is selected. You can change this interval at any time.

2.3. Data extraction

Before extracting data, you can choose the **filter** icon in the table to sort the data in ascending or descending order.

To print or export all sections of a dashboard, select the **download** icon located in the horizontal navigation menu. You will have the option to download either a **PDF** snapshot of your current view or a **CSV file**. To export metrics for a single widget, select the **three dots** and choose **Extract to CSV**.

2.4. Usage statistics

Under the graph, you will see a table that shows trunk groups and key statistics. Select the trunk group name to display the group's call volume, peak usage, Mean Opinion Score or call disconnect causes. Each option has a corresponding graph that shows:

2.4.1. Call volume

The total number of inbound and outbound calls.

2.4.2. Peak usage

The highest active concurrent calls ("water mark") within a selected timeframe. The red line on the graph indicates the maximum capacity assigned to this trunk group.

2.4.3. Mean Opinion Score

The average user experience ratings within a given timeframe. Values are based on the ITU-T-defined standard P.800.1 and the following score definitions:

MOS	Experience
4.4	Maximum for G.711 codec
4.0 – 4.3	Satisfied
3.6 – 4.0	Some users satisfied
3.9	Maximum for G.729 codec
3.1 – 3.6	Many users dissatisfied
2.6 – 3.1	Nearly all users dissatisfied

Note: you can find the MOS for each call in call details (see topic 2.5).

The MOS for the customer access segment (WAN) and the MOS from Bell to the remote endpoint (PSTN) are both plotted on the graph. MOS is determined at call setup by measuring the media path performance – packet loss, jitter, latency and call codec types are key parameters used to derive the MOS score. A single low MOS on the carrier leg could be due to a degraded cellphone or issues with another carrier's network. A consistent low MOS (i.e. below 3.0) on the customer WAN indicates a fault on the user's side of the call path, whereas a low MOS on the Bell side could indicate that the issue resides in the carrier network. For more information about the network pathway and how the MOS score is determined, please see appendix A.

2.4.4. Call disconnect

ITU standards have 83 disconnect cause-codes. Common cause-codes include:

Cause-code	Description
No error	Normal call clearing, i.e. the device releases the call normally
User busy	Called number is busy
Unallocated number	Called number is not assigned to an end user
Resource unavailable	Either there is network congestion – in the network where the telephone number is registered – or the maximum number of calls per second has been exceeded
Call rejected	End user has rejected the call
Destination out of order	Called number is not in service
Temporary failure	Either the called device did not respond, has “do not disturb” turned on, or rejected the call as “ring no answer”
No route	Number is not in service
Recovery on timer expiry	Number has a 24-hour call timer
Ring no answer	Ring count exceeded
Bearer capability not implemented	Bad codec or codec mismatch
Normal unspecified	Unspecified call clearing without an error (e.g. call redirect but not through normal device release)
No circuit/channel available	Either there is network congestion – in the network where the telephone number is registered – or the maximum number of calls per second has been exceeded

To see the full list of disconnect cause-codes, see Appendix B.

Note: Approximately half of the cause codes are generated outside of the Bell network, and when this happens, Bell cannot determine the underlying conditions.

2.5. Call reports

At the bottom of the SIP Trunking Usage view, there is a table with call details. You can select **Edit columns** from the drop-down menu in the top right-hand corner of the table to modify the details shown (i.e. time, trunk group, call details, etc.). You can also select filter icons within the table to adjust parameters or use the search function to find specific attributes.

To export up to three months of detailed call reports, you can set the timeframe and select **Extract all to CSV** from the drop-down menu in the top right-hand corner of the table. To see detailed reporting data for an individual call, select the **expand** icon in the specific row – this will open a page with full call information.

3. Service reports

To access an inventory of features and services, and to see SLAs or the status of tickets:

- Select **Service** from the My Reports drop-down menu.
- Select **Reports** in the horizontal navigation menu. A drop-down menu up will open where you can select **SIP Trunks**.

There are five SIP Trunking reports to choose from:

3.1. Scorecard

Summarizes the SIP Trunking monthly service availability, total time taken to restore and total incidents opened over a period of time.

3.2. Service availability

Reflects the total time the SIP Trunking service is available, minus the total minutes that the service is not available, as tracked by trouble tickets. View:

- Monthly service availability and results to target (SLA: 99.90%)
- List of incidents by date, customer and service impacted
- Incident details including severity level and status

Formula: $\text{Availability} = \frac{((A * C) - D)}{(A * C)} * 100$

A = Σ (Number of concurrent users able to make calls at one time per trunk)

B = Day of the month (any number between 1 and 31)

C = $60 * 24 * B$

D = Σ (Total outage time per call per trunk)

3.3. Mean Time to Restore (MTTR)

Shows the mean time from incident to full restoration of the SIP Trunking service (i.e. the sum of all reactive trouble tickets averaged by the number of incidents in a given month). View:

- Monthly MTTR and results to target (SLA: 4 hours)
- List of incidents by date
- Incident details including severity level and status

3.4. Incident details

Provides a complete list of incidents opened and details the attributes of these incidents, including severity level and status.

3.5. Inventory report

Displays a complete list of features, concurrent call subscriptions and telephone numbers associated with the SIP Trunking groups. If you select the trunk group name, you will see all telephone numbers belonging to that trunk group, and there is a link at the bottom of the report to download all trunk details for the given month.

Each report will give you the option to export to Excel, Word or PDF, make comments, see information and ask for help, by selecting the corresponding icon.

4. Support for reports

4.1. Performance reporting

Call: 1 888 788-2355

4.2. Service reporting

By phone: 1 877 657-8516

By email: performancereporting@bell.ca

5. Bell Privacy Policy

Every year, we ensure that our employees sign a code of business conduct that requires the safeguarding and proper use of personal computer information. We also place strict controls on the protection and use of personal information within our systems and websites and ensure that our employees are trained to respect your privacy at all times.

The Bell Privacy Policy applies to all Bell companies and the services provided to you in accordance with your contractual agreement with Bell. The full text of the Bell Privacy Policy is located at bell.ca/privacy for your convenient reference.

Should you have any questions or concerns about the Bell Privacy Policy or how employees are trained to respect your personal information, please contact your account representative or the Bell Privacy Ombudsman at privacy@bell.ca.

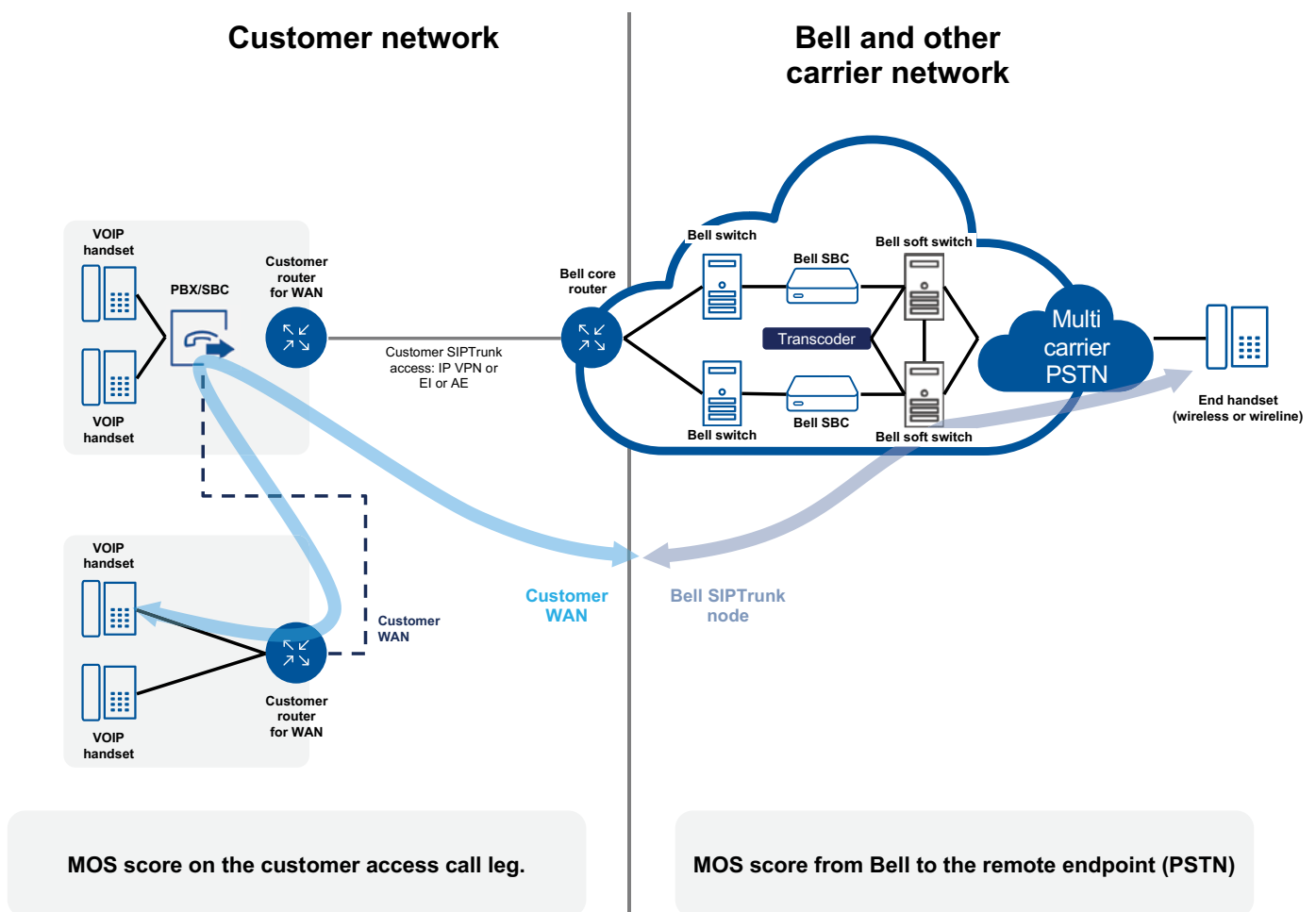


Appendix A – Network pathway and MOS

The diagram shows the media path from customer-owned devices in the customer's network, connecting through the customer WAN/LAN to the Private Branch Exchange (PBX) and Session Border Controller (SBC), and finally to supporting hardware in the carrier network. Media path characteristics (jitter, packet loss, latency and codec type) are used to calculate the MOS score at the mid-point of the call, with one segment being the "customer access" and the other segment the "carrier network".

The customer WAN leg will include the LAN segment if the customer VoIP handset media path is not transcoded by the customer SBC and the customer SBC is on bypass mode. If the customer SBC transcodes the media path or acts as a back-to-back user agent (B2BUA), then the customer WAN MOS score will only include the call path between the customer SBC and the Bell SIP Trunking SBC.

Please note, the carrier network segment includes the Bell network as well as other carrier networks. If the carrier network segment includes a direct VoIP connection to mobile handsets, the wireless leg on the call path may have a lower MOS score.



Appendix B – Disconnect cause-codes

ITU-T defined standard P.800.1 disconnect cause-codes:

Cause-codes	
1	Unallocated or unassigned number
2	No route to specified transit network (Transit Network Identity)
3	No route to destination
4	Send special information tone
5	Misdialled trunk prefix
6	Channel unacceptable
7	Call awarded and being delivered in an established channel
8	Prefix 0 dialled but not allowed
9	Prefix 1 dialled but not allowed
10	Prefix 1 not dialled but required
11	More digits received than allowed, call is proceeding
16	Normal call clearing
17	User busy
18	No user responding
19	T.301 expired – User alerted, no answer from user
21	Call rejected
22	Number changed to number in diagnostic field
23	Reverse charging rejected
24	Call suspended
25	Call resumed
26	Non-selected user clearing
27	Destination out of order
28	Invalid number format or incomplete address
29	EKTS facility rejected by network
30	Response to STATUS ENQUIRY
31	Normal, unspecified
33	Circuit out of order
34	No circuit/channel available
35	Destination unattainable
36	Out of order
37	Degraded service
38	Network out of order
39	Transit delay range cannot be achieved
40	Throughput range cannot be achieved
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit channel not available
45	Preempted
46	Precedence call blocked
47	Resource unavailable, unspecified
49	Quality of service unavailable

Cause-codes

50	Requested facility not subscribed	
51	Reverse charging not allowed	
52	Outgoing calls barred	
53	Outgoing calls barred within CUG	
54	Incoming calls barred	
55	Incoming calls barred within CUG	
56	Call waiting not subscribed	
57	Bearer capability not authorized	
58	Bearer capability not presently available	
63	Service or option not available, unspecified	
65	Bearer service not implemented	
66	Channel type not implemented	
67	Transit network selection not implemented	
68	Message not implemented	
69	Requested facility not implemented	
70	Only restricted digital information bearer capability is available	
79	Service or option not implemented, unspecified	
81	Invalid call reference value	
82	Identified channel does not exist	
83	A suspended call exists, but this call identity does not	
84	Call identity in use	
85	No call suspended	
86	Call having the requested call identity has been cleared	
87	Called user not member of CUG	
88	Incompatible destination	
0x59	89	Non-existent abbreviated address entry
0x5A	90	Destination address missing, and direct call not subscribed
0x5B	91	Invalid transit network selection (national use)
0x5C	92	Invalid facility parameter 93 Mandatory information element is missing
0x5D	93	Message type non-existent or not implemented
0x5F	95	Invalid message, unspecified
0x60	96	Mandatory information element is missing
0x61	97	Message type non-existent or not implemented
0x62	98	Message not compatible with call state or message type non-existent or not implemented
0x63	99	Information element non-existent or not implemented
0x64	100	Invalid information element contents
0x65	101	Message not compatible with call state
0x66	102	Recovery on timer expiry
0x67	103	Parameter non-existent or not implemented – passed on
0x6F	111	Protocol error, unspecified
0x7F	127	Internetworking, unspecified
0x80+	128 or higher	Proprietary diagnostic code. Typically used to pass proprietary control or maintenance messages between multiplexers.