

# WatchGuard M200 Firewall/Router QoS Configuration Guide



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# Introduction

Because smaller companies are generally less protected and easier to break into, small business has become the new big target for cyber-attacks. The Firebox M200 firewall is specifically engineered to defend all types of small businesses against attacks that are no less fierce than those targeting larger organizations..

The Firebox M200 Unified Threat Management (UTM) solution is up to 3 times faster than competing products with all security layers turned on, and up to 94 percent faster performing HTTPS inspection, ensuring businesses never have to compromise network security for performance.

## Key Security Features

- Enterprise-grade prevention, detection, correlation and response from the perimeter to the endpoint with our Total Security Suite.
- Latest generation multi-core processors provide the power to run all security scanning engines in parallel without causing performance bottlenecks..
- Gain critical insights about network security, from anywhere and at any time, with WatchGuard Dimension..
- Built-in compliance reports, including PCI and HIPAA, mean one-click access to the data you need to ensure compliance requirements are met.
- Up to 8 Gbps firewall throughput. Turn on additional security services and still see up to 2.6 Gbps throughput.

# Performance and Capacities

- Ideal for small to midsize business
- Recommended user count – 60
- IPsec VPN throughput – 3.2 Gbps
- AV – 620 Mbps
- IPS – 1.4 Gbps
- UTM – 515 Mbps
- 1 Gig ports – 8
- Concurrent sessions – 1,700,000

### Note:

*The firewalls recommended here are quality hardware that we have tested internally and work reliably with our services. However, given the constantly updated firmware and physical changes made by manufacturers and the nature of cloud-based services, RingCentral cannot control the final configuration of the hardware or your computer systems/networks, or promise that any given firewall will work with your system, or guarantee that our information is 100% up to date.*

# Configure Your Firewall

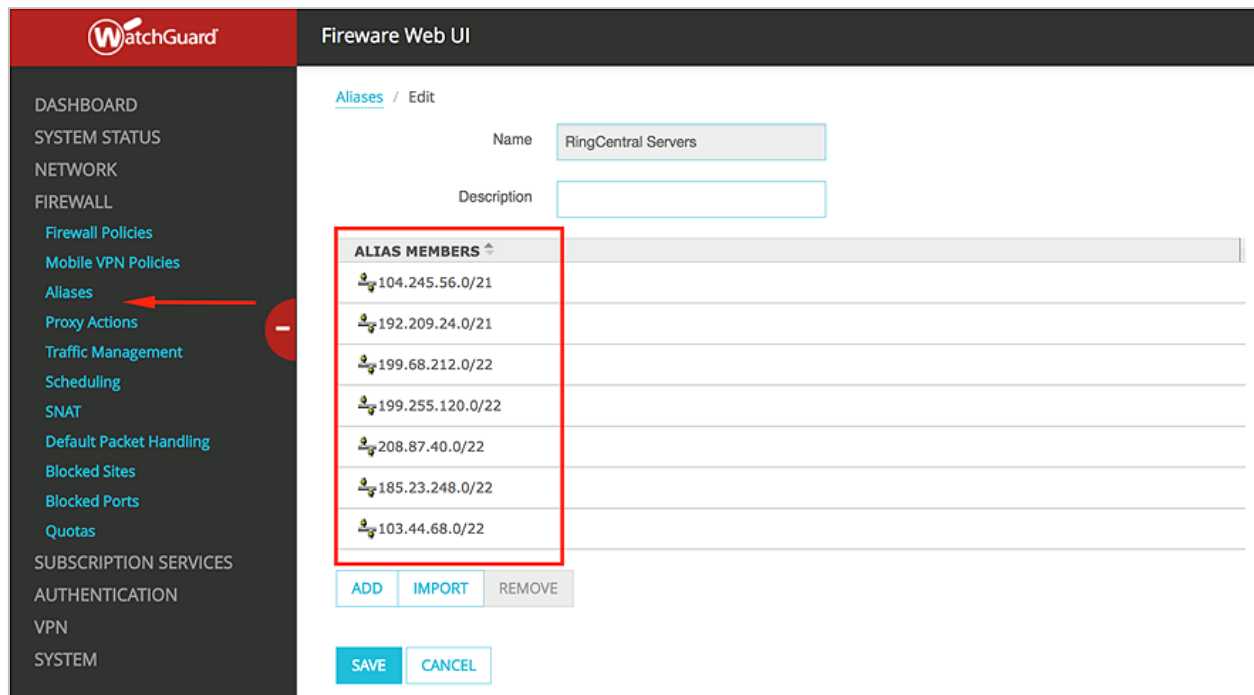
## WatchGuard M200 Firewall Configuration



<b>Brand:</b>	WatchGuard
<b>Model:</b>	M200
<b>Firmware version:</b>	11.12.4

To review the Quick Start Guide for the WatchGuard M200 click [here](#). See the WatchGuard M200 Hardware Guide [here](#).

1. Log into your WatchGuard. For information about logging into your WatchGuard GUI for first time setup, please refer to the [WatchGuard Quick Start Guide](#).
2. Navigate to 'Firewall' and select subcategory 'Aliases'. (Figure 1)



- a. Once under 'Aliases', select 'Add'. Name the new alias, "RingCentral Servers".
- b. Under 'Alias Members' select 'Add'. Create a new entry for each of the following servers found here under Section 7: RingCentral Supernets.
- c. Hit 'Save' once all server Supernets have been added.

Figure 1

3. Navigate to 'Firewall' and select subcategory 'Firewall Policies'. Hit the 'Add Policy' button.. (Figure 2)

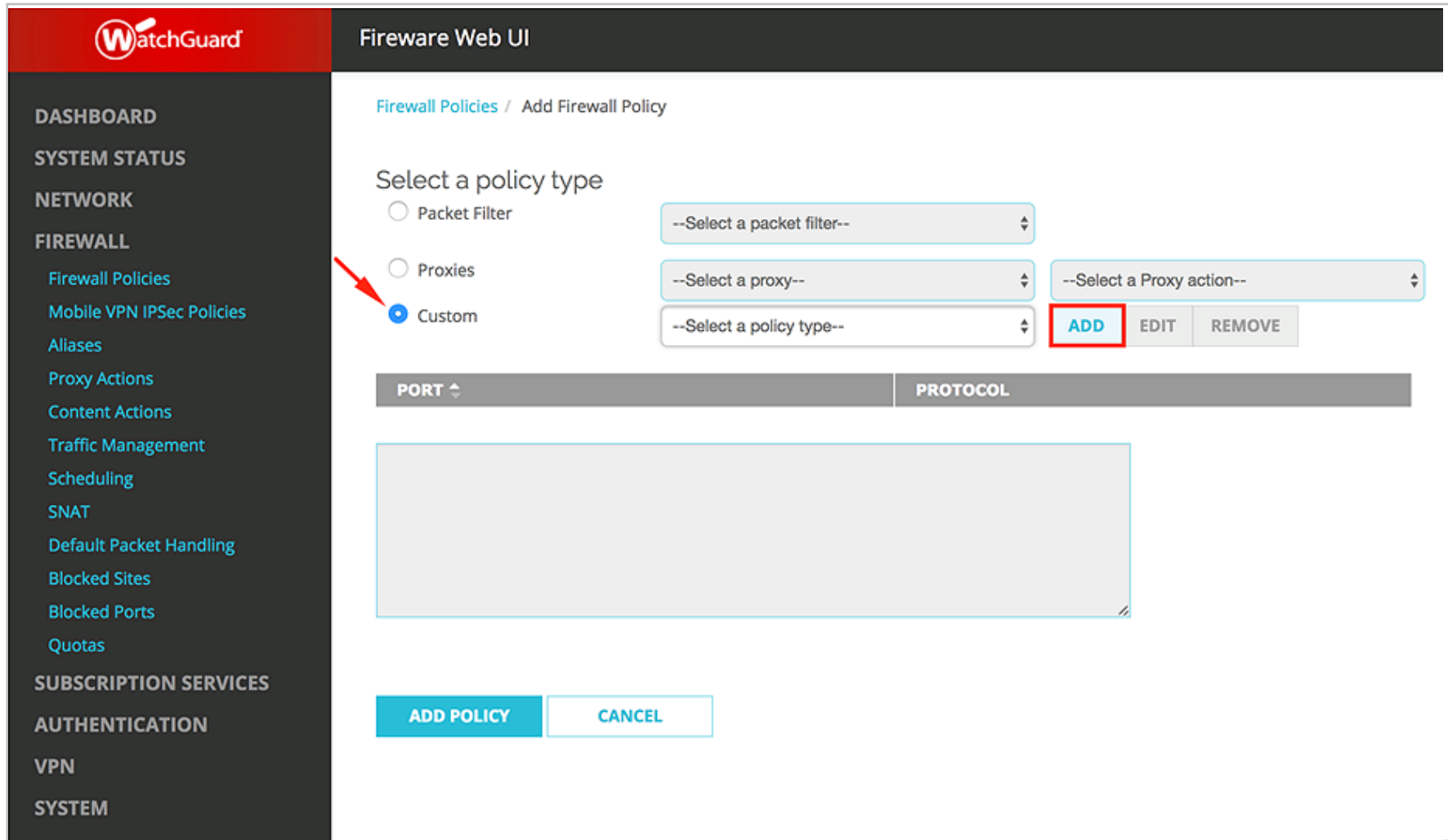


Figure 2

4. In Figure 2 above, under 'Select Policy Type' hit 'Custom'. Then hit 'Add'.
  - a) Name your new policy "RingCentral".
  - b) Keep 'Type' as Packet Filter.
  - c) Under Protocols, enter all applicable RingCentral ports. Current ports can be found [here](#) in Appendix B. (Figure 3)
  - d) Enable "Specify custom idle timeout" by hitting the checkbox, and change the value to '300'.
  - e) Hit 'Save'. Then hit 'Add Policy'.

Policy Type RingCentral	
PORT ↕	PROTOCOL
5060-6000	UDP
5060-6000	TCP
8000-8200	TCP
8000-8200	UDP
16384-16492	UDP
8801-8802	TCP
443	TCP
80	TCP
123	TCP
636	TCP
3000-4000	TCP
3000-4000	UDP
8801-8810	UDP
20000-64999	UDP
1720	TCP
6182	TCP
6182	UDP
123	UDP
53	TCP
53	UDP

Figure 3

5. Now we need to finalize the configuration of the RingCentral Policy. Under the 'Settings' tab: (Figure 4)
  - a) In the 'From' table, change it from 'Any-trusted' to 'Any', change if you have VLANs setup and want to specific 'From' endpoints.
  - b) In the 'To' table, hit 'Add' and select the previously added 'RingCentral Servers'. Remove the default entry 'Any-External'.
  - c) Enable "Specify custom idle timeout" by hitting the checkbox, and change the value to '300'.

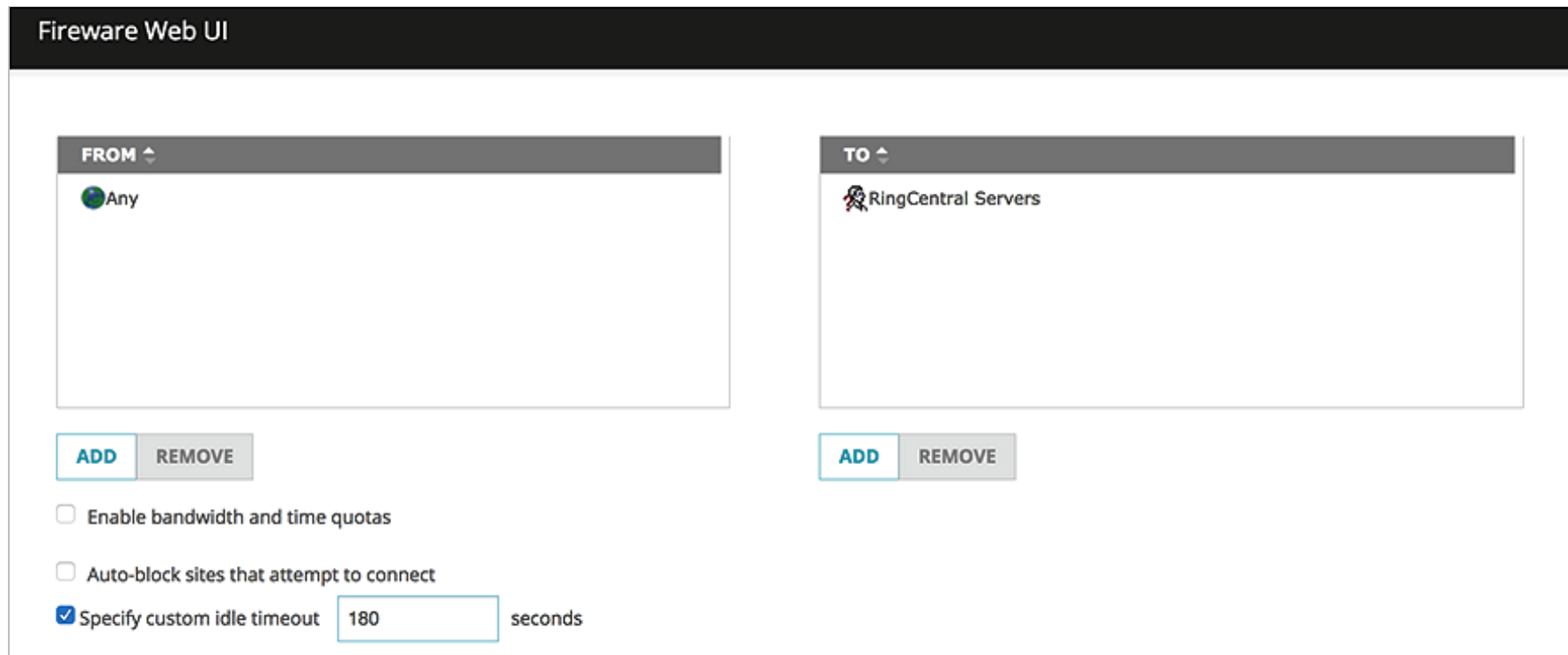
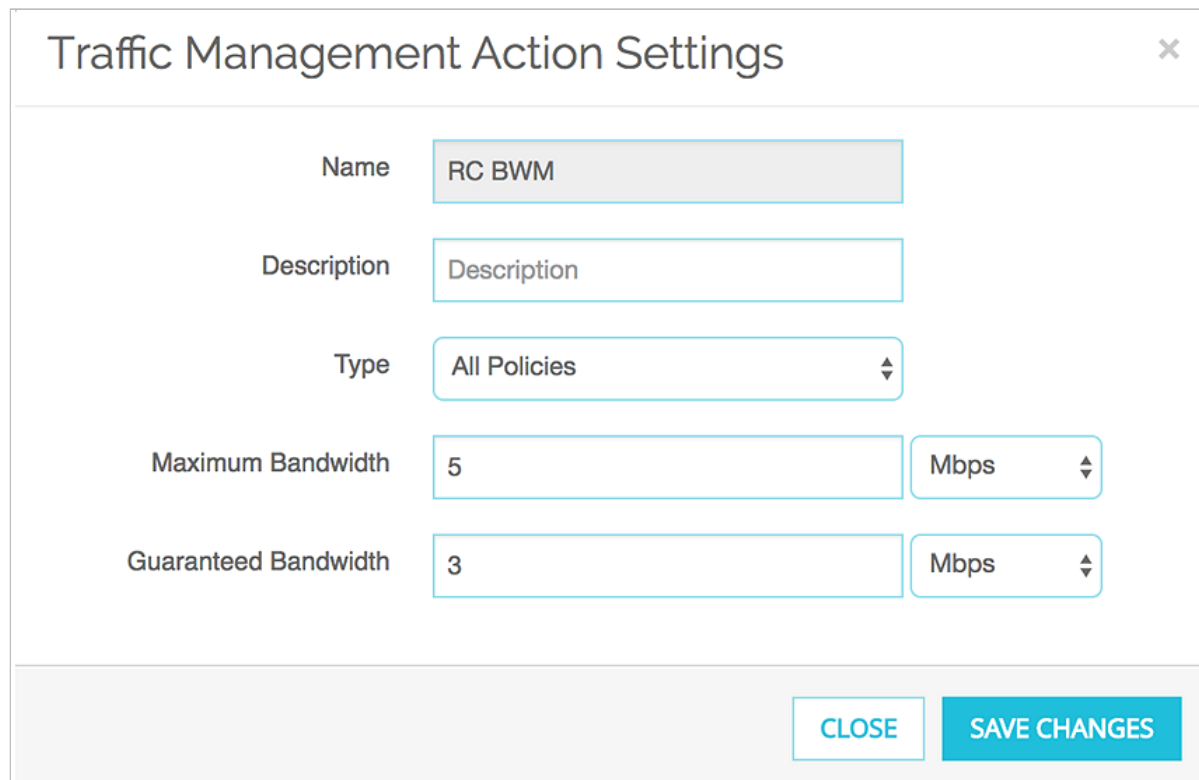


Figure 4

6. Now navigate to the 'Traffic Management' tab. (Figure 5)
  - a) Under 'Forward Action (From > To)', hit 'Add'. To help calculate these values, check [here](#) on Section 10.
    - i. Name is 'RC BWM'
    - ii. Change 'Maximum Bandwidth' to values specific to your environment.
    - iii. Change 'Guarantee Bandwidth' to values specific to your environment.
    - iv. Hit 'Save Changes'.



**Traffic Management Action Settings** [X]

Name: RC BWM

Description: Description

Type: All Policies

Maximum Bandwidth: 5 Mbps

Guaranteed Bandwidth: 3 Mbps

[CLOSE] [SAVE CHANGES]

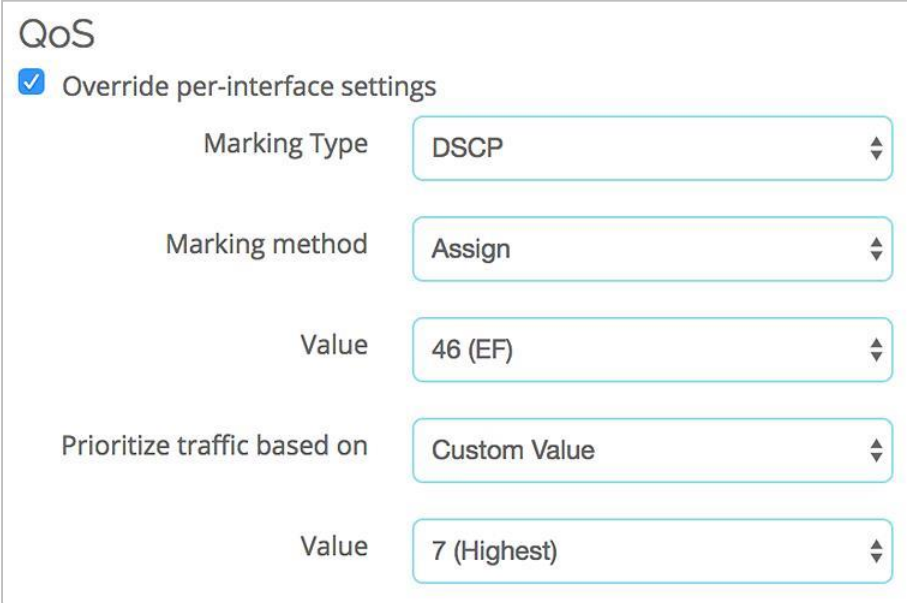
Figure 5

- b) Under 'Reverse Action (To > From)', select 'RC BWM' from the dropdown.



7. Now navigate to the 'Advanced' tab. (Figure 6)

- a) Browse down to the 'QoS' section and modify the following values:
- Change 'Marking Type' to 'DSCP'
  - Change 'Marking Method' to 'Assign'
  - Change 'Value' to '46 (EF)'
  - Change 'Prioritize Traffic Based On' to 'Custom Value'
  - Change 'Value' to '7 (Highest)'



The screenshot shows the 'QoS' configuration section. At the top, there is a checked checkbox labeled 'Override per-interface settings'. Below this, there are five rows of configuration options, each with a label on the left and a dropdown menu on the right. The settings are: 'Marking Type' set to 'DSCP', 'Marking method' set to 'Assign', 'Value' set to '46 (EF)', 'Prioritize traffic based on' set to 'Custom Value', and a second 'Value' set to '7 (Highest)'.

Label	Value
Marking Type	DSCP
Marking method	Assign
Value	46 (EF)
Prioritize traffic based on	Custom Value
Value	7 (Highest)

Figure 6

- Hit 'Save' at the bottom.
- Select the new Policy 'RingCentral' and change it to Order 1. Once set, hit 'Save Policy Order'.

# Quality of Service

RingCentral provides reliable, high-quality voice service. Your local network, internet connection, and your router all contribute to overall call quality, with sufficient dedicated bandwidth to voice calls being the biggest factor. To help you manage your call quality, RingCentral offers tools to check your internet connection speed, and instructions to configure the Quality of Service (QoS) settings of your routers.

The QoS settings on your router enable it to give priority to real-time voice traffic over lower-priority data traffic, such as large downloads. This document provides recommended configuration settings to ensure the highest-possible QoS experience on the WatchGuard M200 Firewall/Router. Please reference the relevant TCP/UDP settings on the [Ports and Firewalls](#) table to complete the recommended setup.

## Test Your Connection Capacity

The RingCentral **Connection Capacity test** will help determine the maximum number of simultaneous RingCentral calls that can be supported on your broadband connection. Run this test during normal business hours when the connection is in use by other applications, including large file downloads.

The capacity test should be run using the maximum number of simultaneous call connections needed, and should use the G.711 codec selection.

### Specific requirements for QoS:

- Bandwidth—100 Kbps up and down per call
- Latency (one-way)—less than 150 ms
- Jitter—not to exceed 100 ms
- Packet loss—less than 3%

These requirements are the foundation for ensuring your local network can support satisfactory VoIP. Failure to meet these requirements will result in poor voice quality.

When the test completes, you will see the recommended number of simultaneous calls your connection can support while maintaining good quality voice calls.

## Supported Browsers for Test

- Internet Explorer® 11 or higher (Windows® XP, 7, 8 or higher)
- Firefox® version 36 or higher (Windows and Mac®)
- Safari version 6.2 or higher (Mac)

### Note:

*The routers recommended here are quality hardware that we have tested internally and work reliably with our services. However, given the constantly updated firmware and physical changes made by manufacturers and the nature of cloud-based services, RingCentral cannot control the final configuration of the hardware or your computer systems/networks, or promise that any given router will work with your system, or guarantee that our information is 100% up to date.*

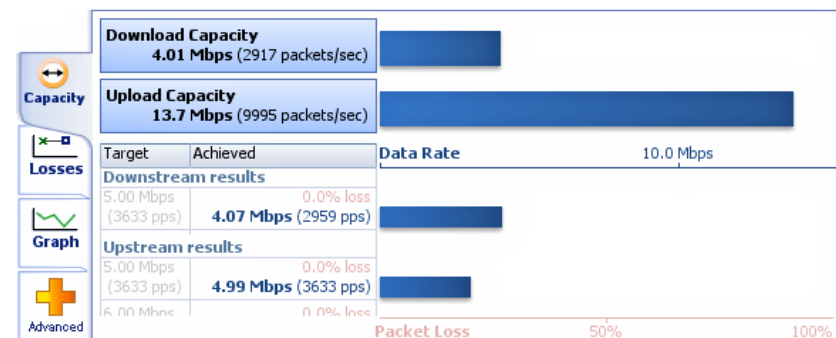
Start Test

⊖ **Advanced Options**

Download bandwidth starting point (Mbps): 5.0 ▼ ?

Upload bandwidth starting point (Mbps): 5.0 ▼ ?

Codec: G.711 (High) ▼



## Test Your Connection Quality

RingCentral provides a **VoIP Quality test** that will simulate VoIP calls between your computer and RingCentral, and provide an estimate of the voice quality you should expect when using our service. For the most accurate results, run this test *at least* three different times throughout a business day, and *during peak usage times*, while connected to the network that you plan to use for RingCentral.

A two-minute test is typically sufficient, while longer tests are useful to find intermittent problems or to simultaneously test VoIP performance along with other traffic, such as file transfers or remote access.

Select the maximum number of simultaneous users you expect to support, and set the test duration between 1 and 5 minutes; 2 minutes is considered sufficient in most instances.

Click [jitter](#) and [packet loss](#) on the **RESULTS SUMMARY** panel to view the overall quality of your expected VoIP connection.

**MOS score** (Mean Opinion Score) refers to a test that has been used for decades in telephony networks to obtain the human user's view of the quality of the network. The MOS is the arithmetic mean of all the individual scores, and can range from 1 (worst) to 5 (best). A MOS score of 4 is good.

Number of simultaneous calls: 45

Advanced Options

Test Duration (minutes): 2

Codec: G.711 (High)

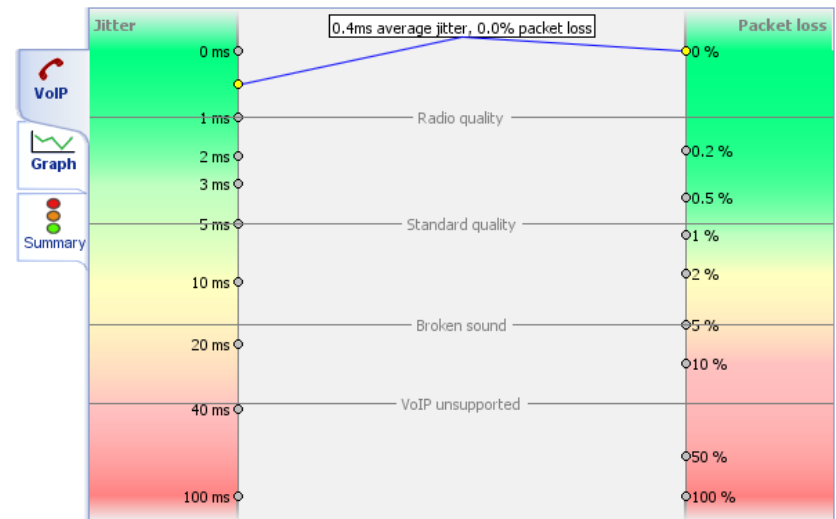
Start Test

**RESULTS SUMMARY**

Test audit report

- Your connection's **jitter** was measured as 0.4 ms, which indicates that it can produce a constant flow of data. Voice-over-IP conversations should be of good quality.
- Your connection's **packet loss** was measured at 0.0%, which indicates that it is accurately transferring data. Voice-over-IP conversations should be of good quality.

Your connection's **MOS score** is estimated to be 4.2.



## Ports and Firewalls Settings for RingCentral VoIP Service

Please see RingCentral [Ports and Firewalls](#) reference link for the required TCP/UDP ports that need to be opened for RingCentral devices to work. Categories are:

- Device Type
- Protocol
- Source Port—Customer Side
- Destination Port—RingCentral Side

Also see information on **Port Triggering** on the referenced [page](#).