Montage Technical Specifications

General Application Requirements

100% SaaS application with the following browser requirements & compatibility

- Browsers: Chrome current version -1, Firefox current version -1 and 52.3 Extended Support Release (ESR), IE 11, Edge current version -1, and Safari 11 current version -1.
- JavaScript enabled

<table>
<thead>
<tr>
<th>Computer</th>
<th>On-Demand Recording</th>
<th>On-Demand Playback</th>
<th>Live Video Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chrome</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Firefox</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>IE 11</td>
<td>✓¹</td>
<td>✓</td>
<td>✓²</td>
</tr>
<tr>
<td>Edge</td>
<td>✓¹</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Safari</td>
<td>✓¹</td>
<td>✓</td>
<td>X</td>
</tr>
</tbody>
</table>

¹ Requires Flash plugin
² Requires Interview plugin

<table>
<thead>
<tr>
<th>Mobile</th>
<th>On-Demand Recording</th>
<th>On-Demand Playback</th>
<th>Live Video Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>iOS</td>
<td>✓¹</td>
<td>✓</td>
<td>✓¹</td>
</tr>
</tbody>
</table>

¹ Requires Mobile App

Minimum Computer Recommendations

- Windows 10/8/7, MAC OSX+ or Linux with 1.2GHz (or faster) processor & minimum memory required by O/S
- Montage Mobile Interview Applications: Android 6.0+.+, iOS 10.3+
- Webcam (for video recording only)

Recommended Internet Connection

440kbps (or faster) Internet connectivity
Application Overview

Montage’s SaaS solution is designed to meet the unique challenges that come with talent acquisition such as scheduling, interviewing and assessing a candidate. In addition to a core set of common services hosted on a set of core application servers, each component utilizes unique services which are hosted on their own sets of servers. Montage’s Implementation Consultant coordinates with each client’s network and security team to identify which regional servers are referenced when using Montage’s interview platform.

IP Addresses and Ports

This section describes the specific sets of IP addresses and ports required in support of each service.

Montage Core Application IP Address & Port(s) (Outgoing connections only)

All clients must enable outgoing connections to Montage’s core application servers. The Montage core application includes the web application supporting recruiters’ activities related to job and candidate management, ordering on-demand interviews and scheduling live interviews, many of which generate system emails to interview participants. Montage’s core application servers perform those activities.

<table>
<thead>
<tr>
<th>Server Description</th>
<th>IP Address/Domain</th>
<th>Outgoing Port(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montage Application (http &amp; https) (Required for all Montage applications)</td>
<td>*.montagetalent.com (All clients)</td>
<td>80 &amp; 443</td>
</tr>
<tr>
<td></td>
<td>*.montagetalent.eu (EU Clients)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*.montagetalent.com.au (Australia, New Zealand)</td>
<td></td>
</tr>
<tr>
<td>Email Servers:</td>
<td>54.240.32.168, 54.240.32.169, 54.240.32.170</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>email.montagetalent.com, email.montagetalent.eu,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>email.montagetalent.com.au</td>
<td></td>
</tr>
<tr>
<td>Outgoing Email Addresses:</td>
<td><a href="mailto:noreply@email.montagetalent.com">noreply@email.montagetalent.com</a>,</td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="mailto:noreply@email.montagetalent.eu">noreply@email.montagetalent.eu</a>,</td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="mailto:noreply@email.montagetalent.com.au">noreply@email.montagetalent.com.au</a></td>
<td></td>
</tr>
<tr>
<td>SPF Domain</td>
<td>smtp-out.email.montagetalent.com, smtp-out.email.montagetalent.eu, smtp-out.email.montagetalent.com.au</td>
<td></td>
</tr>
<tr>
<td>DKIM Signing Domains:</td>
<td>amazonses.com, email.montagetalent.com, email.montagetalent.eu, email.montagetalent.com.au</td>
<td></td>
</tr>
</tbody>
</table>

Montage supports and highly recommends whitelisting of domain names (*.montagetalent.com, *.montagetalent.eu, and *.montagetalent.com.au) and does not recommend whitelisting of IP addresses. The Montage application automatically provisions new servers in response to usage spikes with frequent changes to IP addresses.

Please understand that by whitelisting IP addresses, Montage will no longer remain reliable, scalable and elastic for your company. Any IP address discovered through network analysis may change at any time and should not be used in an attempt to whitelist IP addresses. Your Montage Implementation Consultant and/or
Client Success Manager is available to work with your network teams to ensure reliable connectivity to Montage servers.

**On-Demand Video IP Address & Port(s) (Outgoing connections only)**

Montage has a dedicated set of servers for recording and playback of videos. For those clients only utilizing Montage’s on-demand video platform, Montage uses servers at the following IP address ranges for playback of video. Montage delivers playback via port 443 (https). Clients will also be required to open ports 80, 443, and 1935 if your talent acquisition team requires recording of on-demand videos or job related videos inside their corporate network.

<table>
<thead>
<tr>
<th>Server Description</th>
<th>IP Address/Domain</th>
<th>Outgoing Port(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montage On-Demand Playback Video Server(s)</td>
<td>*.montagetalent.com (All clients)</td>
<td>80 &amp; 443 (for playback)</td>
</tr>
<tr>
<td></td>
<td>*.montagetalent.eu (EU Clients)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*.montagetalent.com.au (Australia, New Zealand)</td>
<td></td>
</tr>
<tr>
<td>Montage On-Demand Recording Servers</td>
<td>54.209.92.164, 52.7.222.112, 52.39.61.149, 52.36.204.94, 52.49.74.160, 52.209.36.11, 52.77.41.28, 52.221.46.140, 52.62.56.86, 52.63.136.129, 54.94.168.6, 52.67.122.56, 52.0.11.13</td>
<td>80, 443, &amp; 1935 (for recording)</td>
</tr>
</tbody>
</table>

**Live Video Platform**

The following table documents the domains and ports required by Montage’s WebRTC live video servers. UDP port 3478 is the preferred communication port to the WebRTC Live Video Platform. However, if UDP port 3478 is not available, media communication utilizes TCP port 443. For an optimal video experience, clients must allow outgoing connections (UDP/3478) and configure network appliances to minimize latencies with the client to server communication for the live interview servers.

Montage Live Video browser client software utilizes regular HTTPS and WebSocket connections to the signaling servers via the Internet on port TCP/443. If the only way to access the Internet from your network is through a proxy, then it must be a transparent proxy or configured in the browser for HTTPS connections. Ensure TCP/443 is open for outgoing connections to the domains identified. The minimum requirement is that outgoing TCP port 443 is open. Some default firewall/proxy rules only allow for SSL traffic over port 443. You will need to configure firewall and proxy rules so non-web traffic (non-https) can also pass over this port. Also, WebRTC signally traffic requires a persistent WebSocket connection and a load-balanced proxy server configuration must accommodate a persistent connection.

Although Montage Live Video client software can use UDP or TCP connections for media, we highly recommend enabling UDP to improve the quality of the real-time audio and video communications. In the case of UDP, the browser client requires connectivity from the browser to the media servers via the Internet on port UDP/3478. The browser client initiates the connection from inside the corporate network, and there are no connections initiated from outside the corporate network.
### Server Description | IP Address/Domain | Outgoing Port(s)
---|---|---
Montage Live Interview Video Server(s) (Only required for Live Video Interview) | *.tokbox.com & *.opentok.com (for all ports) 3.214.145.96/27, 34.223.51.192/27, 99.80.88.240/28, 3.123.12.128/28, 74.201.205.0/25, 72.251.224.0/25, 72.251.228.0/25, 95.172.84.0/25, 64.95.96.0/25, 117.20.41.128/25, 203.190.122.112/29, 52.41.63.240/28, 52.200.60.16/28, 54.233.127.224/29, 52.51.63.16/28, 54.250.250.208/28, 52.65.127.192/27, 52.66.255.192/27, 54.89.253.64/28, 35.158.127.224/28, 34.218.216.144/28, 13.251.158.0/28, 52.213.63.176/28 | TCP/443 & UDP/3478 optional but preferred

**Note:** Firefox does not support proxies that inspect packets to validate that connections are real TLS connections because Firefox does not support TURN over TLS. Internet Explorer requires the installation of a plugin. Use the latest version of the IE browser when possible. IE plugin supports basic authentication.

**For Chrome and Firefox only:** The link [http://tokbox.com/tools/connectivity/](http://tokbox.com/tools/connectivity/) tests and verifies network accessibility to the servers required to participate in the WebRTC interview and/or meeting and the ability to send non-web traffic via TCP over port 443. Reporting which diagnostics pass or fail will help your Montage Client Success Manager diagnose connectivity issues.

The link [https://clientsuccess.montagetalent.com/testpages/networktest.aspx](https://clientsuccess.montagetalent.com/testpages/networktest.aspx) tests the network bandwidth capabilities to the servers required to participate in the WebRTC interview or meeting. Reporting the video and audio bandwidth and packet loss will help your Montage Client Success Manager diagnose connectivity issues.

**Live Interview Soft Phone Browser Client**

The softphone is not required for on-demand voice or on-demand video interviewing. It is an optional component for both Montage live video and Montage live voice interviews.

Typically, clients use their office telephones when working at their place of business. Some users elect to use the Montage soft phone within the Montage application in lieu of their business phone. For those clients planning use of the soft phone inside their corporate network for either live video interview or live voice interview, your firewall should allow outgoing UDP ports 10,000 - 20,000 to the public internet from the browsers that will be using soft phone client and allow return traffic in response. Due to the dynamic nature of phone Amazon AWS cloud platform, we strongly recommend that you not limit this access to a specific range of IP addresses.

**On-Demand Bandwidth Usage**

**Reviewing an On-Demand Video**

The typical on-demand video response is approximately 1 minute and ranges from 1.5 to 2 MBs in size. The video player will buffer ahead so bandwidth demand will be higher during the initial viewing of the video. On average, on-demand playback uses approximately 150 - 200 kbps to maintain smooth video flow without any pauses or delays. With unlimited bandwidth and monitoring the network, clients will see a few seconds of high

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bandwidth usage and then minimal bandwidth consumption for the remainder of the minute. The video player will be very tolerant of any throttling imposed on incoming video streaming, but the live video experience will not.

**Recording an On-Demand Video**

Recording uses local buffering since candidates may have less than reliable connections, so we tolerate some bandwidth limitations during recording. With a good network connection combined with Montage’s standard resolution and frame rate, clients typically see an average rate of approximately 160 kbps. Again, this assumes a relatively stable image. There are examples of people sitting in front of a window with a lot of background activity and bandwidth usage will jump to 400 kbps, but that is highly unusual. Demand for recording within a client’s corporate network is very low, so Montage does not consider usage for recording a potential high bandwidth, client network consumer.

**Reviewing an On-Demand Voice**

The typical on-demand voice response is 1 minute long and averages approximately 250 KBs in size. The audio player will buffer ahead so bandwidth demand will be higher during the first few seconds of playback. On average, on-demand playback uses approximately 10 - 20 kbps to maintain smooth video flow without any pauses or delays. With unlimited bandwidth, clients monitoring their network will see a less than a second of high bandwidth usage and then minimal bandwidth consumption for the remainder of the minute. The player will be very tolerant of any throttling imposed on incoming audio.

**Live Interview Bandwidth Usage**

**Live Interview Bandwidth Usage**

Montage’s live video WebRTC application delivers a highly interactive video experience between interview participants while minimizing load on our client’s corporate network and responding appropriately to candidate connectivity worst case scenarios. The following graph demonstrates the expected bandwidth usage for an interview based on the number of participants. Montage’s live video interview platform uses compression to minimize traffic and the actual bandwidth can vary slightly over the course of an interview session.
Live Interview QoS (Quality of Service for Live Video Interview)

Montage recommends clients implement a QoS policy for both incoming and outgoing traffic to its live video interview servers prioritizing the live interview network traffic higher than the default Best Effort priority (AF41 preferred). Clients can estimate approximate incoming and outgoing bandwidth QoS policies using the following equations. (Assume each participant generates approximately 240 kbps)

Outgoing Traffic Estimates

NI = Number of simultaneous interviews
NLP = Number of participants connected to the local network
Total Outgoing Traffic = NI * NLP * 240 kbps

For example, assume your HR department is planning on panel interviews with two hiring managers in the local office, a hiring manager at another facility and a candidate. The HR department believes there will be at most 6 simultaneous interviews at any point in time.

NI = 6
NLP = 2
Total Outgoing Traffic = 6 * 2 * 240 kbps = 2,880 kbps

Incoming Traffic Estimates

NI = Number of simultaneous interviews
NLP = Number of participants connected to the local network
NP = Number of total participants in an interview
Total Incoming traffic = NI * ((NP * NLP) – NLP) * 240 kbps

Using the preceding example.

NI = 6
NLP = 2
NP = 4
Total Incoming Traffic = 6 * ((4 * 2) – 2) * 240 kbps = 8,640 kbps