Hatsize Learning Corporation
200, 555 11 Ave SW Calgary, AB
T2R 1P6 Canada
Phone: (403) 538-3519
Email: support@hatsize.com
Website: www.hatsize.com

Hatsize Technical Requirements Guide

System Checker

Your first step is to run a Hatsize System Checker. Your results will not be the whole story, but they're a good place to start. Note your bandwidth and latency scores (and of course, whether or not the system checker finishes at all). Below I have provided the System Checker links for each datacenter.

North America, West:
https://syscheck.hatsize.com/syscheck/?location=NAM-WEST

North America, East:
https://syscheck.hatsize.com/syscheck/?location=NAM-EAST

Europe:
https://syscheck.hatsize.com/syscheck/?location=Europe

Asia, Pacific:
https://syscheck.hatsize.com/syscheck/?location=APAC

Application Performance Requirements

Each user needs a certain amount of bandwidth (volume of data per/second) and reasonably low latency (the round trip time for a single message to reach our data center and for the reply to arrive at the user's workstation).
Ideally, each user should receive:

- Bandwidth: At least 0.8Mbps per second (100Kbytes)
- Latency: Less than 125milliseconds (about 1/10 second)

Bandwidth Requirement for Classrooms

Bandwidth requirements are cumulative. Each user requires at least 0.8Mbits/second (100Kbytes). The classroom requirement is multiplied by the number of users scheduled for the class.

10 User Event = 10 x 0.8Mbits/second = 8Mbits/second
20 User Event = 20 x 0.8Mbits/second = 16Mbits/second
30 User Event = 30 x 0.8Mbits/second = 24Mbits/second

The Hatsize application is a real-time system. The continuous data transmit/receive will *not* consume the maximum, but users will find the application slow to respond if needed bandwidth is not available when required.

Evaluating the Network Environment

1. **Will the students be using a hard line or a wireless Ethernet connection?**

   We recommend using a hard line Ethernet connection whenever possible. Wi-Fi connections are less reliable as Wi-Fi signals tend to fluctuate, being subject to a greater number of obstacles than a direct line.

---

2. **Will the internet connection be shared with users outside of the classroom environment?**

   If users other than the students are accessing this connection, it would be helpful to note the times of day the traffic is highest and schedule lunch breaks and lectures during these periods to avoid bandwidth saturation. The option of multiple internet connections, breaking the class up into separate sessions, or having some students work from home would be helpful, particularly in a low-bandwidth or high-traffic environment.

---

3. **Does your Access Point and/or Router support Traffic Shaping, QoS (Quality of Service), Bandwidth Quotas or other forms of traffic management?**

   If so, Hatsize would recommend taking advantage of these features. Other users doing things like streaming videos and downloading files can be "bandwidth hogs", and can possibly interfere with your event.

---

4. **Are the users allowed to install alternative browsers?**

   Recent versions of Mozilla Firefox and Google Chrome are the recommended choices for access to Hatsize labs, as they demonstrate more stability than the stock options of Internet Explorer/Microsoft Edge and Safari. Additionally, we recommend WebSocket-enabled browsers. You can verify your browser is WebSocket enabled by using the following site: https://websocketstest.com/

---

5. **Will the user be connecting behind a VPN or firewall, through a proxy, or using an Antivirus program?**

VPN

We recommend disconnecting from your VPN while accessing our labs. A VPN can increase latency quite dramatically, especially if you're being sent around the world twice. Removing this extra step in your network logistics can provide a notable speed increase.

Antivirus

Antivirus software can cause issues that are not normally picked up the System Checker. These can cause frequent class interruptions. We recommend creating an exception for the site to which you are connecting (company.hatsize.com), and if you have further concerns, please reach out to our support team (information at the end of this document) with the software you are using, and we can look into possible compatibility issues.

Proxy

While Hatsize should be able to traverse most proxy servers, avoiding them is the best course of action.
Proxy servers can block entire websites, and throttle internet speeds. We recommend that the local IT team bypass the proxy, or arrange for an internet connection without a proxy.

Compatible Proxy Servers:

a. HTTP proxy with authentication (NTLM, Basic, Digest)
b. HTTP proxy without authentication
c. SOCKS5

Firewall

There are no known issues traversing corporate firewalls, provided that the labs are permitted to open secure connections on port 443; however, software firewalls on local machines can be troublemakers. Firewall administrators can add IP exceptions to allow connections to our data centers (list on the next page).

Hatsize Data Center IP Ranges

Network Administrators may want to define firewall exceptions to allow connections to Hatsize Data Centers where they would normally be blocked by default policies. Firewall/proxy logs may show packets dropped to/from these IP ranges.

Our Data Centers are geographically dispersed and use load balancing on the front end, so actual events can connect to any of the following IP ranges:

Data Center Location:	IP Block Range:
Asia – Pacific	27.111.210.160/28
Europe	149.13.88.0/25
North America – West	204.191.218.128/25 207.228.103.128/26
North America – East	76.75.74.128 /25

FAQ

Q: What can I expect if the network environment does not meet the minimum bandwidth requirements?

The WI-FI spectrum, access point, and Internet Connection all have a finite maximum bandwidth. At 100% utilization, no increase is possible. Usually, all traffic will get through, eventually, but first there will be significant delays. Since we aim for Latency (round trip time) if 125ms or less (1/10 second), a "significant" delay is a 1/10 second. When the available bandwidth is congested (100% utilized) the traffic backlog results in:

1. Delayed screen updates
2. Delayed keyboard and mouse reactions
3. Delayed system response
4. Possible disconnections

Q: What steps can I take to optimize performance in a low-bandwidth setting?

1. If supported by your network equipment, it would be beneficial to employ traffic shaping, Quality of Service (QoS), bandwidth quotas, or any other form of traffic management available.

2. Opt for a wired connection whenever possible for maximum stability and throughput. Wi-Fi is fickle, and can be a source of congestion in a busy setting.

3. Try to reduce the number of active sessions whenever possible (closing browsers when students are not actively using their machines).

4. Consider splitting your class into smaller groups, or organizing students in pairs who will share a single kit. Again, reducing the number of active sessions.

5. Avoid using the "View" and "Control" options, instead opting for the "over-the-shoulder" method. In an in-person setting, the natural thing to do is usually visit each student at their desk, but this is worth mentioning. The features create additional data streams. By avoiding these features you will be doing what you can to make optimal use of the limited bandwidth that is available.

6. Interference from other users often follows a predictable pattern. The local IT team will know when their busiest and quietest (lowest traffic) times of day are. Consider adjusting the training schedule to aim for the lowest traffic times of day.

7. Remember that when using the internet, some things are out of your control, and so it's always good to have a "Plan B". Even if pretests go well, ISP issues are not uncommon. Among the issues instructors have faced in the past are local equipment failure, undersea cable problems/general Internet defects, national firewalls (war, civil disturbance), misreported capabilities and unexpected local firewall interference. A few hours is a long time to tap dance. A few days or a week is a "plan B" situation! Experienced instructors routinely bring a "backup lab" (VMware Workstation or similar) and a projector so they can present while the local IT team and Hatsize work on resolving the network issue.

Final Notes

While this document is fairly comprehensive, there's no better way to evaluate a network environment's compatibility with Hatsize Labs than to spin up a test lab for the onsite IT to access, something which the Hatsize team would be happy to facilitate. For arranging this, please reach out to our Support Team, whose details can be found below.
The goal here is to be prepared, and as Abraham Lincoln liked to put it:

"Give me 6 hours to cut down a tree, and I'll spend the first 4 sharpening my axe."

If you would like to arrange a test lab with our team, find anything in this document unclear, or harbor additional concerns that haven't been addressed, please reach out to the Hatsize Support team via support@hatsize.com