

# Spectades HxGN EAM Cloud Services

## Network Requirements Policy

### 1. Definitions & Acronyms

Defined terms not explicitly defined herein shall be as defined in the Spectades HxGN EAM Cloud Services Agreement or the Security Policy.

Item	Definition
DNS	Domain Name System
Gbps	Gigabits per second
HTTP	Hyper Text Transfer Protocol
HTTPS	Hyper Text Transfer Protocol Secure
ICMP	Internet Control Message Protocol
ISP	Internet Service Provider
Kbps	Kilobits per second
Mbps	Megabits per second
QOS	Quality of Service
S3D	Smart3D
SSL	Secure Sockets Layer
TCP	Transmission Control Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
UDP	User Datagram Protocol

### 2. Authorized User Connection to the Network

Most corporate office environments today support both wired and wireless (Wi-Fi) user connectivity, depending on circumstances. The Cloud Environment, Cloud Services and Software Products require a high-quality consistent connection

### 3. Internet Bandwidth Requirements

Use of Software Products and/or the Cloud Services is dependent upon a session established over the Internet from the Authorized User's machine to the one of the Data Centers. This requires a high speed, high quality Internet connection at the Authorized User's site.

Any Software Products that involve either rendering or editing 3D content have the following bandwidth requirements:

**Minimum Required Bandwidth:** 2 Mbps dedicated Internet bandwidth for each simultaneous Authorized User.

**Recommended Bandwidth:** 5 Mbps dedicated Internet bandwidth for each simultaneous Authorized User.

For instance, this means that a site running ten simultaneous Smart 3D clients would require a minimum of 2x10, or 20Mbps, connectivity to the Internet allocated to the application, above and beyond the usual bandwidth requirements at the site and 5x10, or 50Mbps for optimal performance.

For Software Products that do not involve rendering or editing 3D content have the following bandwidth requirements:

**Minimum Required Bandwidth:** 250 Kbps dedicated Internet bandwidth for each simultaneous Authorized User.

**Recommended Bandwidth:** 400 Kbps dedicated Internet bandwidth for each simultaneous Authorized User.

It is recommended that the Authorized User site be served by a dedicated business grade ISP connection, sized using the parameters above.

Satellite connections are **not advisable**, as they introduce very large amounts of latency into the connection, increasing the round-trip time to unacceptable limits. Similar problems may be encountered with wireless point to point or microwave links depending on the Customer Environment.

#### 4. Network Latency Requirements

Network latency from the site location to the Data Center(s) is a critical factor in ensuring an optimal user experience with Cloud Services and the Software Products.

Any Software Products that involve either rendering or editing 3D or EcoSys content have the following latency requirements:

**Maximum Required Latency:** < 150 milliseconds

**Recommended Latency:** < 100 milliseconds

For Software Products that do not involve rendering or editing 3D or EcoSys content have the following latency requirements:

**Maximum Required Latency:** < 300 milliseconds

**Recommended Latency:** < 250 milliseconds

Latency from a specific site/location can be evaluated by navigating to the following URLs via a web browser from the specific physical site in the applicable region:

- EUROPE, MIDDLE EAST, INDIA & AFRICA: <https://perfazeu.smartplantcloud.net/speedtest/>
- UNITED STATES OF AMERICA & CANADA: <https://perfazus.smartplantcloud.net/speedtest/>
- ASIA & PACIFIC REGION: <https://perfazsea.smartplantcloud.net/speedtest/>
- AUSTRALIA: <https://aunet.intergraphsmartcloud.com/>

## 5. Jitter and Packet Loss

Network jitter is defined as the variation in network latency. All Software Products delivered via Cloud Services have the following jitter requirements:

**Maximum Required Jitter:** < 50 milliseconds

**Recommended Jitter:** < 25 milliseconds

Spectades recommends a maximum jitter of 30ms or less (variation in latency response times) if possible, although connections may be acceptable with larger variations.

All Software Products have the following packet loss requirements:

**Maximum Required Packet Loss:** < 0.3%

**Recommended Packet Loss:** < 0.1%

## 6. Firewalls and Port Settings

The site firewalls must allow ports 80/tcp (http) and 443/tcp (https), 443/udp at a minimum. Additional ports may be required for services including file import / export services, etc. All Software Product session traffic is carried over HTTPS. It may also be useful to allow ports associated with the ICMP protocol to the Cloud Services proxy servers for troubleshooting purposes.

Please note that specific IP addresses may by subject to change at any time, but the DNS name will remain the same.

Cloud Services firewall rule requirements may change from time to time as a result of future service enhancements.

## 7. Domain Name Resolution

DNS servers must be set up and configured correctly at each site/location and all connections must use a DNS resolver of last resort that is located in the same country as the Authorized Users.

## **8. Quality of Service**

Where possible it is recommended that the network should utilize a Quality of Service (QOS) policy to prioritize HTTPS traffic to the Software Product proxy servers.

## **9. Web Proxy And Caching Services**

Many corporate entities deploy web proxy solutions for http and https traffic for performance and security reasons. As all Cloud Services connections are encapsulated and encrypted within a https connection, it is advised that all traffic to Spectades's Cloud be excluded from any category filtering, web caching, and security inspection in order to maximize performance.

Spectades currently does not recommend SSL interception and decryption on a proxy server for Cloud Services.