# Network Security Summary

## Stations and Devices

IX and IXG Series stations require a PoE connection for communication and power.

| | |
|---|---|
| Entrance Station: | IXG-DM7-HID(A) |
| Answering Stations: | IXG-2C7, IX-MV7-*, IX-RS-*, IXG-MK |
| Door Stations: | IX-EA, IX-DV, IX-DVF-*, IX-DVM, IX-SSA-*, IX-SS-2G |
| Adaptors: | IXGW-(T)GW, IXGW-LC, IXW-MA(A) |
| Mobile App: | “Aiphone IXG” |

## Support Tool Software Information

The IXG Support Tool is used to batch configure all stations simultaneously, by finding each station on the network by its MAC address. The IXG Series is designed to function on managed or enterprise-level networks. However, the broadcast method used to find stations during the programming process may require advanced network configuration to allow network-wide broadcasts.

It is possible **Windows Defender or other firewalls and anti-virus software may prevent this broadcast search for stations**. If this occurs, make a rule in the firrewall for IXG Support Tool.

It is recommended that stations are set up on the same unmanaged switch for initial configuration. Once the IP addresses have been set, the stations may be removed from this environment and deployed to the network.

Download and install the IXG Support Tool programming software. The latest version of Support Tool and IXG Series station firmware can be found at the links below.

IXG Support Tool: https://www.aiphone.com/IXG-SupportTool
Firmware Upgrades: https://www.aiphone.com/kbtopic/firmware

### Support Tool and Line Supervision Software Minimum System Requirements

**OS:** Windows 7 (Professional, Enterprise, Ultimate), Windows 8 (Pro, Enterprise), Windows 8.1 (Pro, Enterprise), Windows 10 (Home, Pro, Enterprise), Windows 11 (Home, Pro, Enterprise)
**CPU:** 32 bit (x86) or 64 bit (x64) of 1 GHz
**RAM:** 4GB or more
**Screen Resolution:** 1280 x 768

### Support Tool and Line Supervision Software Default ID and Passwords

**Administrator ID:** admin *(up to 32 alphanumeric characters)*
**Administrator Password:** admin *(must be changed after first use, up to 32 alphanumeric characters)*
**Property Management ID:** admin *(up to 32 alphanumeric characters)*
**Property Management Password:** admin *(must be changed after first use, up to 32 alphanumeric characters)*

## Security and Communication

The IXG Series supports the use of **HTTPS** and **TLS (v1.2)**, providing the ability to upload signed certificates to encrypt and secure authentication. IXG Support Tool allows centralized certificate management with the ability to upload **CA certificates** to stations.

**SSH** *(SFTP over SSH)* is used when uploading a setting file to stations using the IXG Support Tool, but not during typical operation. This is a critical function, therefore SSH cannot be disabled.

**HTTPS** is used when uploading from IXG Support Tool to the IXG Cloud server. This may require whitelisting the following URL: ***.ap-northeast-1.amazonaws.com** (this * is a wildcard representing multiple subdomains).

**IEEE 802.1X** authentication is supported.

**Hash Algorithms:** MD5, SHA1, SHA256

### Communication

**SIP Connection Port:** 5060

**Audio codec:** G.711 (μ-law, A-law)
**Video codec:** H.264/AVC, Motion JPEG

Video Encoder 1 (Intercom Communication)
**RTP Video:** Start 30000 - End 31000
**RTP Audio:** Start 20000 - End 21000

Video Encoder 2 (Secondary HD Streaming)
**RTP Video:** Start 32000 (1-65534) - End 33000 (1-65535)
**RTP Audio:** Start 22000 - End 33000

**Minimum / Maximum Frame Rate (FPS):** 1 / 30
**Minimum / Maximum Bitrate:** 32 / 2048
**Minimum / Maximum Resolution (Encoder 2):** 320x240 / 1280x960

**IXGW-GW Cloud Communication:** TLS 1.2 is used to setup encrypted connections with allowed cipher suites ECDHE-ECDSA-AES128-GCM-SHA256 and ECDHE-RSA-AES128-GCM-SHA256. Certificates are set to automatically renew with AWS Certificate Manager.

By default, **IXG stations use Unicast when placing outbound calls to other stations**, but may utilize Multicast in network environments that would benefit from the method. When paging to more than 50 stations, Multicast is required and a Multicast address must be set in Support Tool. If Multicast is used, either for calling or when required for large paging groups, any address in the 224.0.0.0 to 239.255.255.255 range may be used.

## Security and Communication *(continued)*

### Addressing

The IXG Series offers batch IP addressing or can be manually set for each device using IXG Support Tool. Each IXG station is set to the same default static IP address *(192.168.1.160)* that can be manually changed or set to DHCP during the programming process.

**IPv4:** 192.168.1.160 *(1.0.0.0-223.255.255.254)*
**Subnet Mask:** 255.255.255.0 *(128.0.0.0-255.255.255.254)*
**Default Gateway:** - *(1.0.0.0-223.255.255.254)*

**IPv6:** - *(2000::0-3FFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF or FD0::0-FDFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFFE*

**IPv6 Default Gateway:** - *(::FF:0-FEFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFE)*

**DNS Primary Server IPv4:** - *(1.0.0.1-233.255.255.254)*
**IPv6:** - *(::FF:0-FEFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFE)*
**Secondary Server IPv4:** - *(1.0.0.1-233.255.255.254)*
**IPv6:** - *(::FF:0-FEFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFE)*

**NTP IPv4:** ntp.jo.aiphone-app.net *(1.0.0.0-223.255.255.255 or Hostname)*
**IPv6:** - *(::FF:0-FEFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFE or Hostname)*

### LTE Connection

The IXGW-TGW Mobile App Gateway can be used to connect the IXG system to a 4G LTE mobile network, using the included SIM card. This connection can be used as a primary network connection for the system, or as a backup to the ethernet connection. The SIM card also allows for calls to a single phone number on each call from an entrance station or door station.

**Supported Networks**: AT&T® (requires activation of included AT&T SIM card). Third-party SIM cards are not supported.

## Additional IXG App Information

**A reachable DNS and NTP server must be assigned to the IXGW-(T)GW Mobile App Gateway**. A public DNS server, such as 8.8.8.8, may be used. Note that the IXG Support Tool has a preset NTP server for the IXGW(T)-GW Gateway. However, this NTP server is based in Japan, so using a local NTP server is suggested.

Outbound communication is required for the IXG Mobile app to function.

| | |
|---|---|
| ***.ixg.aiphone-app.net** : | 443 |
| **iot.us-east-1.amazonaws.com** : | 8883 |
| ***.compute-1.amazonaws.com** : | 10000-20000 |
| **If using an external DNS server:** | 53 |
| **If using an external NTP server:** | 123 |

***:** wildcard representing multiple subdomains

# Ports and Protocols

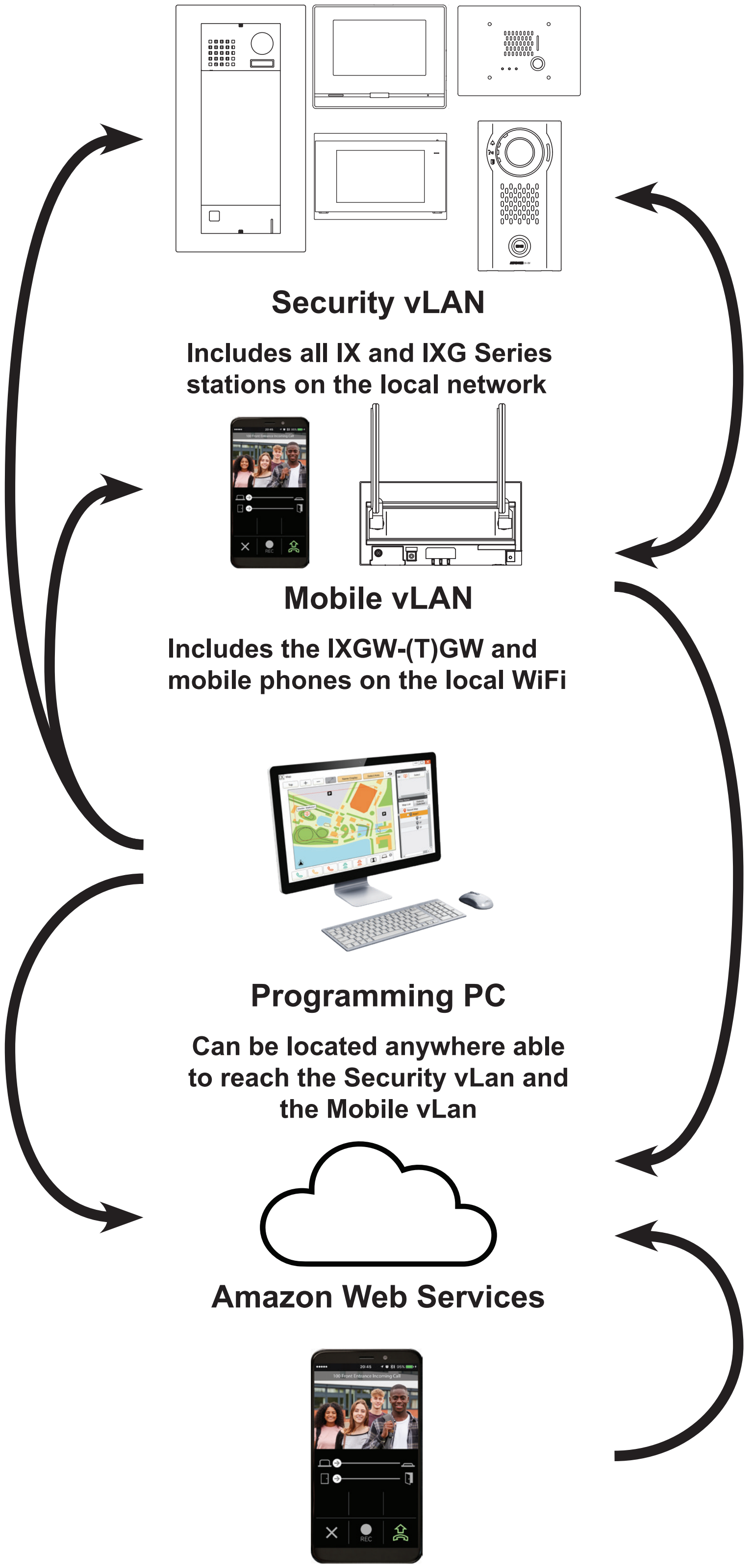
The information below contains the most common and critical ports and protocols for the IXG Series. Some are used only during the initial programming process, others during general use and optional features.

| Port | Type | Service or Protocol | Notes |
|---|---|---|---|
| 5060 | UDP | SIP | Session Initiation Protocol |
| 8740 | UDP | Keep-alive during door release | |
| 8620 | SSL | Door release command | Encrypted Door Release |
| 65011 | TCP | Option Relay Output control | |
| 65014 | UDP | SIF | IXW-MA(A) Destination Port |
| 65030 | UDP | Lift Control Adaptor control | |
| 65060 | UDP | SIF | Acquire IX-SOFT License from IXW-MA(A)-SOFT |
| 123** | UDP | NTP | IXGW-(T)GW Gateway must have an assigned NTP server address to function |
| 53** | UDP | DNS | IXGW-(T)GW Gateway must have an assigned DNS server address to function |
| 25 | TCP | SMTP | Email notifications |
| 443 | TCP | HTTPS (TLS 1.2) | Secure Web Access for certification server control |
| 22* | TCP | SFTP over an SSH session | Setting File Upload for Support Tool |
| 8883** | TCP | Secure MQTT | Call control server connection to Cloud Server |
| 8700* | UDP | Broadcast | Station Search and Association functions with Support Tool |
| 55550 | UDP | Paging Delivery | |
| 59900 | TCP | Message Page Delivery | |
| 65000 | UDP | Multicast Paging Delivery | |
| 55552 - 56552 | UDP | RTP Range used when paging | |
| 10000-20000** | UDP | SRTP/SRTCP, DTLS, ICE(STUN) | IXGW-(T)GW and IXG Mobile App cloud server communication |
| 20000 - 21000<br>30000 - 31000 | UDP | RTP Audio and Video ranges for Encoder 1 | Intercom to Intercom communication |
| 22000 - 23000<br>32000 - 33000 | UDP | RTP Audio and Video ranges for Encoder 2 | Intercom to 3rd Party Streaming |

* IXG Support Tool function / ** IXG App functionality

# IXGW-(T)GW Network Flow Chart

This Flow Chart shows the expected communication for an IXGW-(T)GW when calling from a door or entrance station to an off-site mobile app. The Amazon Web Services servers used to make this connection can vary based on physical location, time of day, and server load.



**Security vLAN**

**Includes all IX and IXG Series stations on the local network**

**Mobile vLAN**

**Includes the IXGW-(T)GW and mobile phones on the local WiFi**

**Programming PC**

**Can be located anywhere able to reach the Security vLan and the Mobile vLan**

**Amazon Web Services**

**Mobile Phones on 4G/5G**

## Bidirectional Communication

5060 TCP
8620 TCP
20000-21000 UDP
30000-31000 UDP

## Outbound Communication

8883 TCP
10000-20000 UDP
53 (if using external DNS)
123 (if using external NTP)
443 (uploading settings)

## Local Setting Uploads

22 (FTP)

## Web Setting Uploads

443 (HTTPS)