IBM®
Augmented Remote Assist Security White Paper

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Introduction

Augmented Reality (AR) enhances the user’s perception of their surroundings by superimposing graphics and media on top of what they see in the real world. By displaying information in the right context and location, AR reduces the cognitive effort needed to relate information to the physical environment (i.e., hardware), cuts down the number of errors through visual guidance and reduces the time required to look up service information.

IBM Augmented Remote Assist

The solution uses the mobile device’s camera, as well as advanced computer vision techniques to recognize the hardware environment that needs support. It allows a remote user to overlay 3D visual annotations on to the field agent’s mobile device screen to provide real time, on-the-spot instructions.

Powered by remote agents, IBM Augmented Remote Assist can guide field agents and client users with visual instructions that appear on their mobile devices in real time.

Terms and definitions

The following is a list of terms and acronyms used in this document.

Term	Definition
AR	Augmented Reality
IP	Internet Protocol
P2P	Peer to Peer
TCP	Transmission Control Protocol
TLS	Transport Layer Security
DTLS	Datagram Transport Layer Security
WSS	WebSocket Secure
SSR	Service Support Representative
RTS	Remote Technical Support

NAT	Network Address Translator
STUN	Session Traversal Utilities over NAT
TURN	Traversal using Relay NAT

The appliance

IBM Augmented Remote Assist consists of the following user-interaction modules to enable the connection of field agents to remote agents:

1. iOS mobile application
2. Web-browser based application

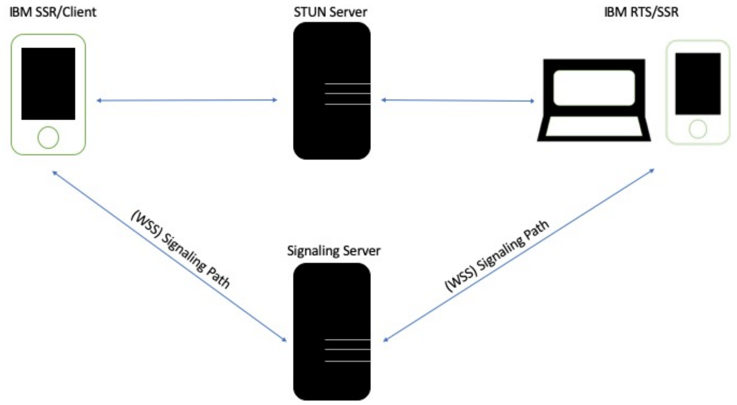
The field agent accesses the mobile application on their mobile iOS device and connects to either i) a remote agent via the web-application, or ii) to another field agent via their mobile application in order to collaborate on the resolution of technical issues.

Handling of streamed images and annotations

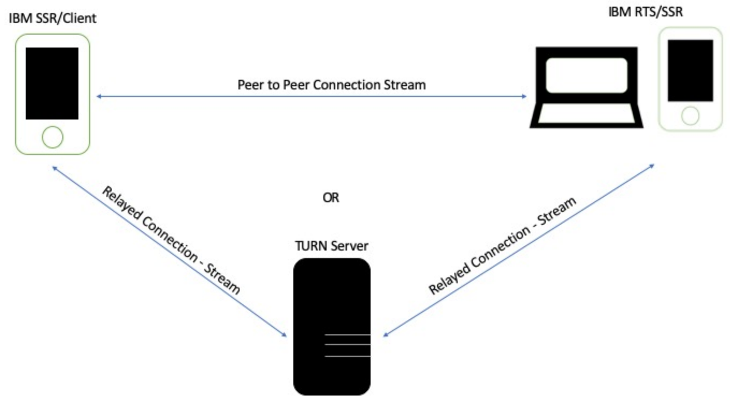
No visual content (images, audio, audio streams, videos or video streams) are stored on the device or anywhere else.

Augmented Remote Assist connectivity

The following diagram shows how the mobile application connects to the web application:



In this setup, the field agent's mobile app establishes a connection to the remote agent's web app through a signaling server. The two apps connect to the signaling server and communicate over a WSS connection to exchange IP address(es) and port(s)—establishing an audio-video stream leveraging WebRTC. This stream occurs once the apps give the required permissions. Once established, the mobile and web applications communicate over a P2P connection in most circumstances.


IBM SSR/Client
IBM RTS/SSR
Peer to Peer Connection Stream
OR
Relayed Connection - Stream
TURN Server
Relayed Connection - Stream

In this setup, the P2P connection is not available and thus a relay-intermediate server is used instead.

Security protocols and encryption

Communication between the IBM Augmented Remote Assist Mobile App – Desktop App and the IBM Augmented Remote Assist Signaling Service

The IBM Augmented Remote Assist mobile and desktop apps use the WSS protocol (i.e., WebSocket over TLS) for transactions involving the exchange of IP address(es) and port(s) with the signaling service, thereby securing the connection by data encryption.

Communication between the IBM Augmented Remote Assist Mobile App and the IBM Augmented Remote Assist Backend

The IBM Augmented Remote Assist Mobile App uses the HTTPS protocol for all web requests including queueing, exchange of session and device information.

Audio-Video Stream Communication

WebRTC encrypts information at the endpoints using DTLS. DTLS is modeled upon the stream-oriented TLS protocol and security for datagram-based applications by allowing them to communicate in a way that is designed to prevent eavesdropping, tampering, or message forgery.

WebRTC is supported by Apple, Google, Microsoft, Mozilla, Opera and—being standardized through the World Wide Web Consortium (W3C)—is leveraged to establish the stream mentioned above.

Service information sent to IBM

This section outlines what service information is transmitted to IBM and the reasons for sending this information when Augmented Remote Assist connects to IBM.

Reasons Augmented Remote Assist connects to IBM

Initiated when field agent connects to remote agent.

Data transmitted to IBM

This table shows the data transmitted to IBM:

Type of Data	Description
Device Information	IBM Augmented Remote Assist collects data about the mobile device such as device model, operating system, battery level and network connection.
Personal Information	IBM Augmented Remote Assist collects personal data such as email, name and company affiliation of the user when using the application.
Session Information	IBM Augmented Remote Assist collects session information such as the names and emails of agents involved in the session, when the agents attempt to connect.

Data handling at IBM

Session images, streamed video and audio are not stored by IBM.

Augmented Remote Assist usage reports and logs are accessible only by designated IBM Support Personnel to assist in general maintenance and monitoring overall performance of the platform. All report data are stored in accordance with IBM Security policies.

All data are associated with a unique identifier and can be purged if required.

Appendix

Supported devices and connectivity requirements

Solution Requirements:

a. Mobile Application Requirements

   i. Operating System: iOS version 12 or newer

   ii. iPhone 7 or newer OR iPad 2017 and newer

   iii. Internet connection: Minimum 5 Mbps WIFI or 4G cellular connection

b. Web Application Requirements

   i. PC/Mac running latest version of Firefox internet browser

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