VIVOH

Vivoh Teams Live Event Multicast Solution

Technical Overview and Requirements

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1: Introducing the Vivoh Teams Live Event Multicast Solution

The Vivoh Teams Live Event Multicast solution enables IT Service Delivery Managers to provide a seamless way to scale Teams Live Events for enterprise webcasting using multicast streaming. Teams hosts and participants will use the familiar Teams interface and see high quality video without impacting their network. IT Service Delivery Managers will use the Vivoh Webinar Manager to register multicast networks to redirect user requests to either the Vivoh Multicast App or the Teams App depending if the user is on the internal multicast network or not. They can also associate third-party messaging resources as URLs to the Vivoh Multicast App. Real-time logs are updated locally and can be forwarded to central logging servers such as Splunk for monitoring and analytics. The Vivoh solution expands the use of Teams Live Events by enabling multicast delivery of the webinar content. This allows thousands of enterprise users to participate without network disruption.

2: Installation Prerequisites

- Supported Browsers
- Supported Operating Systems
- Required Ports
- System Requirements

Supported Browsers

To access the Vivoh Webinar Manager, your computer must meet the following requirements:

- Windows
    - Internet Explorer 11 and above
    - Firefox 45.0.2 and above
    - Microsoft Edge 44 and above
    - Chrome 49 and above

- MacOS
    - Firefox 45.0.2 and above
    - Chrome 49 and above
    - Safari 10.1.2 and above

- Linux

- ○ Firefox 45.0.2 and above
- ○ Chrome 49 and above

Supported Operating Systems

The Vivoh Multicast App is supported by the following:

- Windows 10 and above
- MacOS 10.10 and above
- Ubuntu Linux 14.04 LTS and above

The Vivoh Webinar Manager is supported by the following:

- Microsoft Server 2012 R2 or Microsoft Server 2016 and 2019
- RedHat Enterprise Linux 6.5, CentOS 6.5, Ubuntu 14.04 LTS and above
- Windows 10 and above

The Vivoh Media Server is supported by the following:

- Microsoft Server 2012 R2 or Microsoft Server 2016 and 2019
- RedHat Enterprise Linux 6.5, CentOS 6.5, Ubuntu 14.04 LTS and above

Required Ports

The Vivoh Teams Live Event Multicast solution consists of three components:

- Vivoh Multicast App
- Vivoh Webinar Manager
- Vivoh Media Server

The Vivoh Teams Multicast solution consists of a Vivoh Multicast App, a Vivoh Webinar Manager, and the Vivoh Media Server. The App uses configurable multicast group addresses for video. The Vivoh Webinar Manager uses HTTPS for inbound user and management connections. It uses RTMPS to pull video for multicast rebroadcasting. The Vivoh Media Server uses RTMPS for inbound video streaming connections and HTTPS for inbound management connections.

The ports listed in the following table need to be opened for the Vivoh Multicast App:

Ports	Daemon	Protocol	Usage
20000 -20003	MULTICAST	UDP	Join a private multicast video stream. Add four ports per concurrent channel.

The Vivoh Media Server receives an inbound RTMPS connection from Teams, which requires an external IP address, and then the Vivoh Webinar Manager pulls this via RTMPS and re-broadcasts it as multicast on an internal IP address. For this reason, care must be taken to ensure that any firewalls, proxies, and other security systems are configured to permit read/write access on the following ports for continuous communications.

The ports listed in the following table need to be opened for the Vivoh Video Server:

Port	Daemon	Protocol	Usage
443	HTTPS_PORT	TCP	Administrator and end-user connections
1111	HTTPS_PORT	TCP	Administrator port for Vivoh Media Server
443	RTMPS	TCP	Stream video to / from the Vivoh Media Server

The ports listed in the following table need to be opened for the Vivoh Webinar Manager:

Port	Daemon	Protocol	Usage
443	HTTPS_PORT	TCP	End-user connections
8443	HTTPS_PORT	TCP	Administrator connections

System Requirements

The Vivoh Teams Multicast solution includes the desktop Vivoh Multicast App for participants and two server products: the Vivoh Webinar Manager and the Vivoh Media Server. The Vivoh Multicast App runs on Windows, MacOS, and Linux computers that need to be powerful enough to render streaming video. The servers can run on bare metal OS installations or on Virtual Machines. Currently, the Vivoh Media Server only runs on Linux (compatible Windows video server options are available, for example Red5 Pro and Wowza Media Server). Separate machines or VMs are recommended for the Vivoh Video Server and Vivoh Webinar Manager.

The Vivoh Multicast App requires the following:
Memory: 4GB of RAM
Disk: 250MB
CPU: 3.00 GHz+

The Vivoh Webinar Manager requires the following:
Memory: 8GB of RAM
Disk: 250MB
CPU: vCPU=4

The Vivoh Media Server require the following:

Memory: 8GB of RAM

Disk: 250MB

CPU: vCPU=4

## 3: Installing the Vivoh Teams Live Event Multicast Solution

The Vivoh Multicast App is deployed with an installer for each participants' target OS. The installer is a Windows .exe file generated by the NSIS installation packaging tool. The installer updates the Windows Registry or the OSX Properties List with a vivoh:// Custom URL Handler. This opens the Vivoh App once the user has authenticated via the Webinar Manager.

The Vivoh Webinar Manager for Windows is deployed with an installer that places all required files in a target directory. For Linux, the Vivoh Webinar Manager and Vivoh Media Server are .tar archives that are unpacked in the target directory for operation. Windows and Linux service options are available upon request. Vivoh can also provide OVA virtual machine snapshots.

The Vivoh Webinar Manager has several configuration options. Please see the Vivoh Webinar Manager Installation and Administration guide for detailed configuration instructions.

4: Working with the Vivoh Teams Live Event Multicast solution

The Vivoh Teams Multicast solution enables IT Service Delivery Managers to provide a seamless way for Teams Live Event hosts to schedule Teams Live Events from within the native Teams interface and have the video from the webinar stream to end users via multicast.
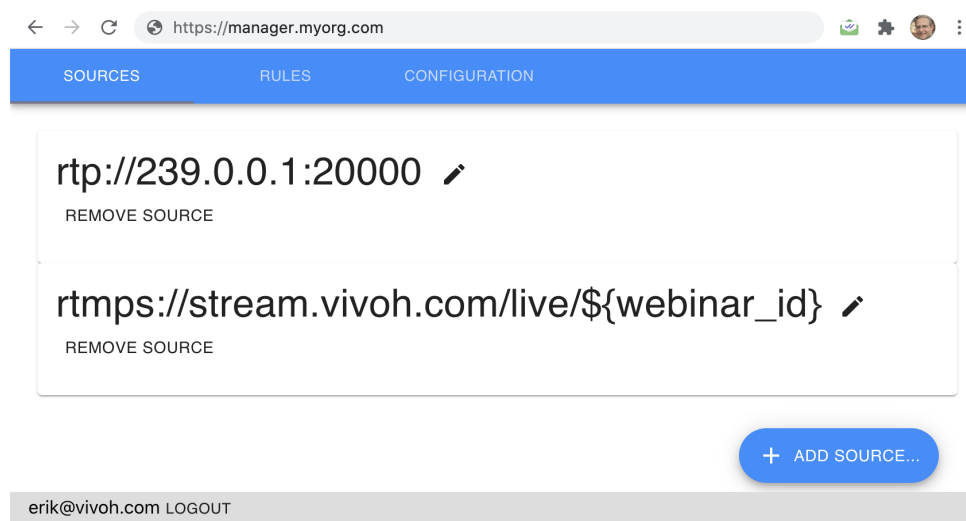
Teams Hosts will use the Custom Live Streaming URL option to push video via RTMPS to the Vivoh Media Server. They should use the Webinar ID as their "Stream Key" as Vivoh will redirect the user to the Vivoh App or back to the Teams App with the same Webinar ID.

Instead of using the Teams Live Event link, users are given a link to the Vivoh Webinar Manager which will redirect them to either the Vivoh Multicast App or the standard Teams Live Event App depending upon their IP address and corresponding matching rules in the Webinar Manager. An example of this link is: https://Teams.company.com/j/12345678912 where 12345678912 is the Webinar ID. Use the ${webinar_id} variable for the source to match the "Stream Key".

5: Working with Logs and Implementing Analytics

The Vivoh Teams Multicast solution enables real-time logging for analytics via a local application log and a performance log. Vivoh recommends Splunk for analytics processing and the use of Splunk Forwarder agents to pick up the performance log files that are generated by the Vivoh Multicast App and push these periodically to the central Splunk server. Reports are available via the Splunk interface. The Vivoh App logs to the user's home directory as 'Vivoh-App.log' and 'Vivoh-App.json'. Vivoh-App.json contains an entry each minute with essential analytics data.
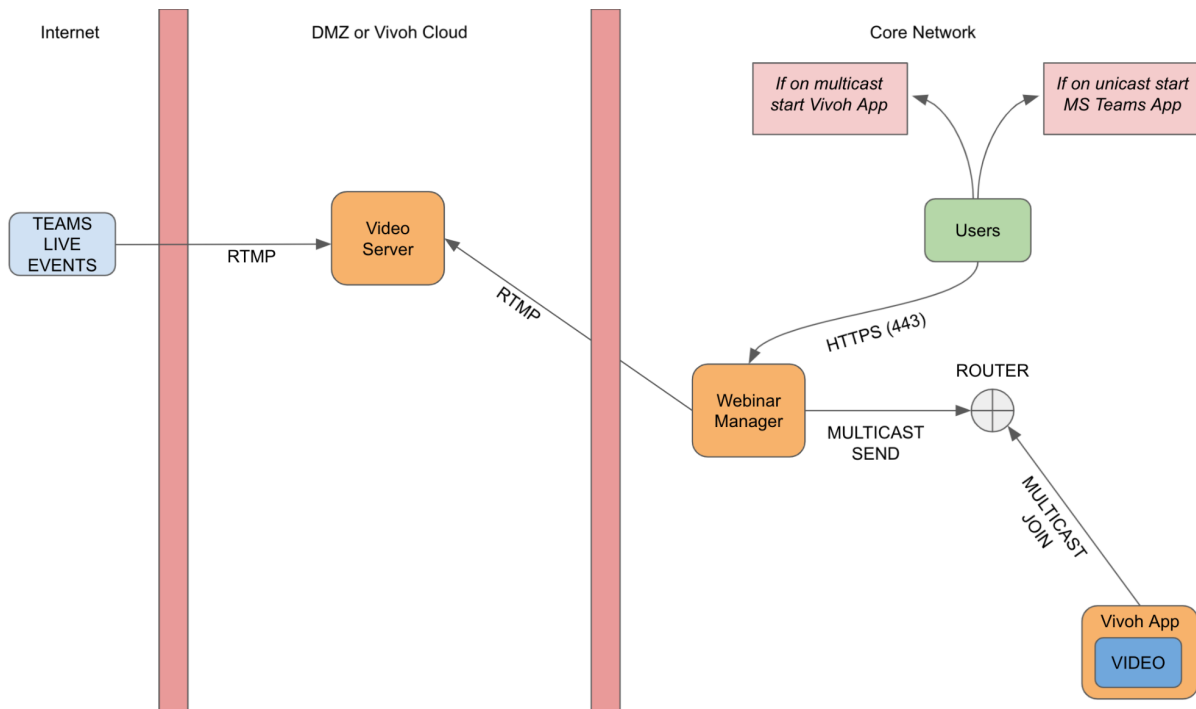
6: Working with Messaging

The Vivoh Teams Live Event Multicast solution enables IT Service Delivery Managers to provide webinar hosts with a way to bring their audience members into existing corporate communications systems for messaging during their live events.

The Vivoh Multicast App supports any web-based messaging service via the configurable URL. IT Service Delivery Managers will configure the approved base URL for the internal messaging service for each channel or for specific webinars, and Hosts can set up "rooms" based upon the Webinar ID. For example, https://messages.company.com/microsoft/${webinar_id} where ${webinar_id} will match the Webinar ID of the Teams Live Event. A QA icon will appear on the Vivoh App interface if the QA url is provided and this URL will be displayed when the user clicks on the QA icon in the App (see Vivoh Multicast App Image on the next page).

The Vivoh Teams Live Event Multicast solution supports third-party live captioning, for example StreamText. When configured with a StreamText URL the Vivoh Multicast App will provide the user with a CC icon which will display captioning within the App.

7: Vivoh Teams Live Event Multicast Solution Data Flow Diagram

Internet | DMZ or Vivoh Cloud | Core Network

If on multicast start Vivoh App

If on unicast start MS Teams App

Users

TEAMS LIVE EVENTS → RTMP → Video Server

RTMP

HTTPS (443)

Webinar Manager

ROUTER

MULTICAST SEND

MULTICAST JOIN

Vivoh App

VIDEO

8: Vivoh Multicast App Image