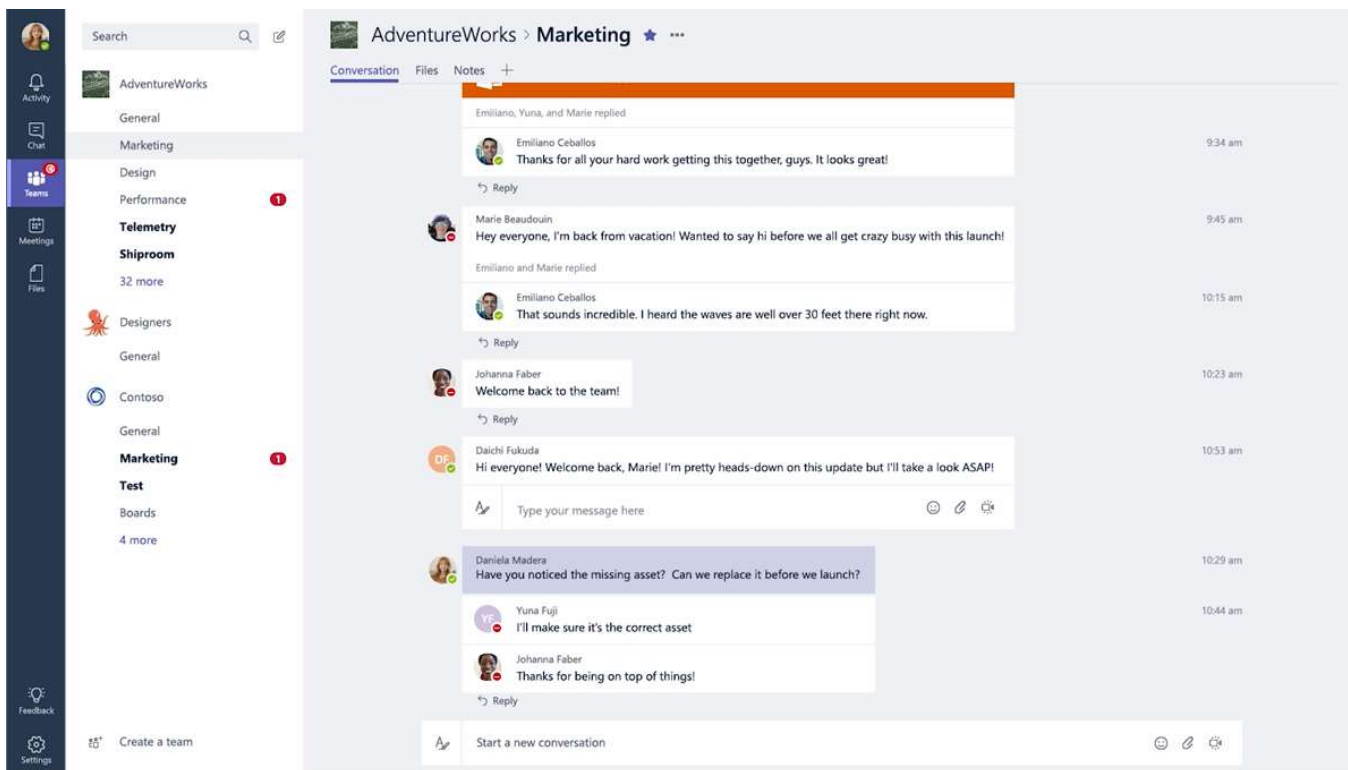


# Deploy and manage Microsoft Teams

Get Microsoft Teams up and running.

# Recap of Previous Presentations

Introduction to Teams at <https://aka.ms/microsoft-teams-readiness>



Microsoft Teams

# Agenda

- Foundation of Microsoft Teams
- Infrastructure Guidance
- Network Planning
- The Admin Portal
- Client Rollout
- Chat Services

# Goals of this Training

- How Microsoft Teams leverages existing Office 365 products
- Ensure Microsoft Teams is able to communicate to the cloud services from within your organization
- Enable and manage the settings
- Rollout the client
- Understand the Meeting and Chat services

# Foundation of Microsoft Teams

# Foundation of Microsoft Teams

- Microsoft Teams is built on top of Existing Microsoft Technologies:
  - Office 365 Groups
  - Office 365 Azure Active Directory
  - Exchange
  - SharePoint
  - OneNote

# Office 365 Groups

- Microsoft Teams uses group membership as the access control list to Files and Notes tabs
- Owners of existing Groups can move them over to Microsoft Teams
- Team creation settings are controlled through the admin portal where you control group creation settings.

# Azure Active Directory (AAD)

- Microsoft Teams uses your existing O365 Azure Active Directory credentials to sign in
- Your Identities are stored in Azure Active Directory
- Can leverage Azure Active Directory Modern Authentication for enhanced security



# Exchange

- A group mailbox and calendar gets created for the Team
- Meetings created within Microsoft Teams gets pushed to your Exchange calendar
- Meetings created in Exchange get synced to Microsoft Teams

# SharePoint

- Microsoft Teams create a SharePoint site for each Team
- Each Channel within a Team will get a folder on this SharePoint site
- Files shared within the Team are stored on SharePoint

# OneDrive for Business

- Files that are shared during private chats are hosted on the user's OneDrive for Business storage
- Navigating to the Files icon on the left side of the application gives you instant access to your OneDrive for Business files

# OneNote

- Notebooks are created for each Team
- Shared Notebook is hosted on SharePoint site
- Sections are created for each Channel
- Accessible from OneNote applications

# Infrastructure Guidance for Microsoft Teams

# Service Endpoint Whitelisting

- Customers are required to whitelist specific URLs on their proxies/firewalls.
- For a current list of endpoints refer here:  
[Office 365 URLs and IP address ranges](#)

# Whitelisted Endpoints

Global URLs			
Purpose	Source   Credentials	Destination	Destination Port
Microsoft Teams web access	Client computer   Logged on user	<a href="https://*.teams.microsoft.com">*.teams.microsoft.com</a>	TCP 443
Email notification service	Client computer   Logged on user	<b>emails.teams.skype.com</b>	TCP 443
Calling Media Relay Services	Client computer   Logged on user	13.107.8.0/24	<b>TCP 443; UDP 3478-3481</b>
Chat service	Client computer   Logged on user	<a href="https://*.msg.skype.com">*.msg.skype.com</a>	TCP 443
1:1 Calling	Client computer   Logged on user	<a href="https://*.cc.skype.com">*.cc.skype.com</a>	TCP 443
Azure media services	Client computer   Logged on user	<a href="https://*.asm.skype.com">*.asm.skype.com</a>	TCP 443
Global traffic manager	Client computer   Logged on user	<a href="https://s-0001.s-msedge.net">s-0001.s-msedge.net</a>	TCP 443
Global traffic manager	Client computer   Logged on user	<a href="https://s-0002.s-msedge.net">s-0002.s-msedge.net</a>	TCP 443
Global configuration manager	Client computer   Logged on user	<a href="https://*.config.skype.com">*.config.skype.com</a>	TCP 443
For the complete list visit: <a href="#">URLs and IP address ranges</a>			

Microsoft Teams

# Network planning



# Chat service versus real-time media

NN61

- Chat Service
  - Messaging (in Teams and Private Chat)
    - Chat
    - GIFs, memes, emojis
  - Files
- Real-time media
  - Audio
  - Video
  - Desktop sharing

Microsoft Teams

## Slide 19

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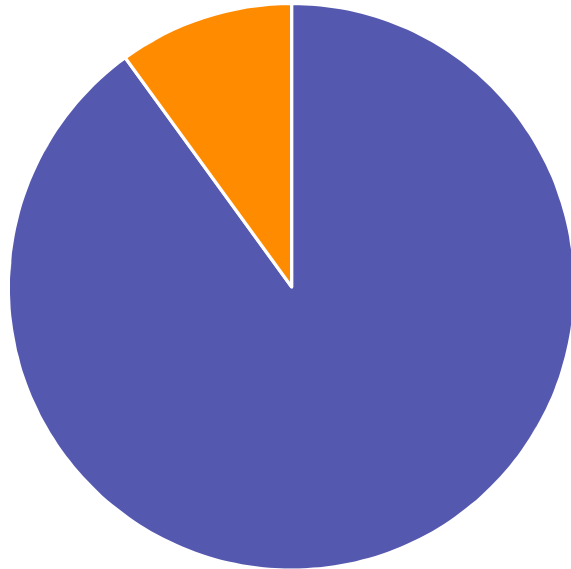
**NN61**

Coloumn

Nishanth Nadarajah, 10/28/2016

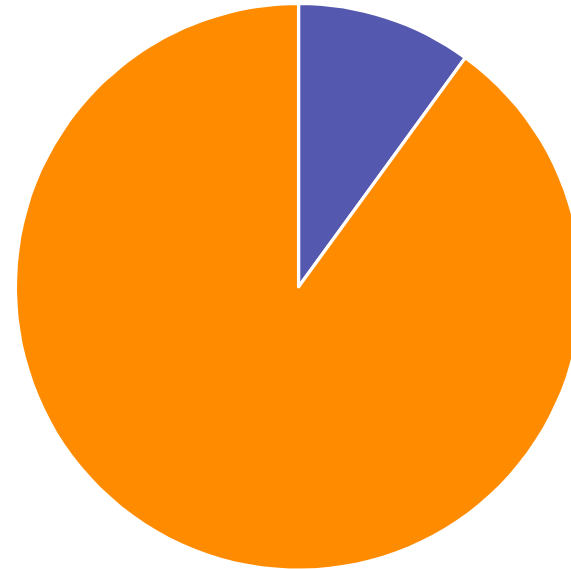
# Disclaimer

What users do in Teams



■ Chat Service ■ Real-Time communication

How this presentation uses the time



■ Chat Service ■ Real-Time communication

Microsoft Teams

# Understanding client flows

- Chat Service content will always travel via O365
- In a 1:1 call, Audio, Video and/or Desktop Sharing will go direct
  - Peer-to-peer if network allows
  - Can be proxied via O365 if required
- Meetings will go via O365
  - For Meetings O365 receives all incoming media and sends it out to the all participants

# Conferencing flows

- Audio
  - Each participant sends one audio stream
  - Conferencing Unit in O365 mixes audio streams
  - Sends exactly one audio stream to each participant

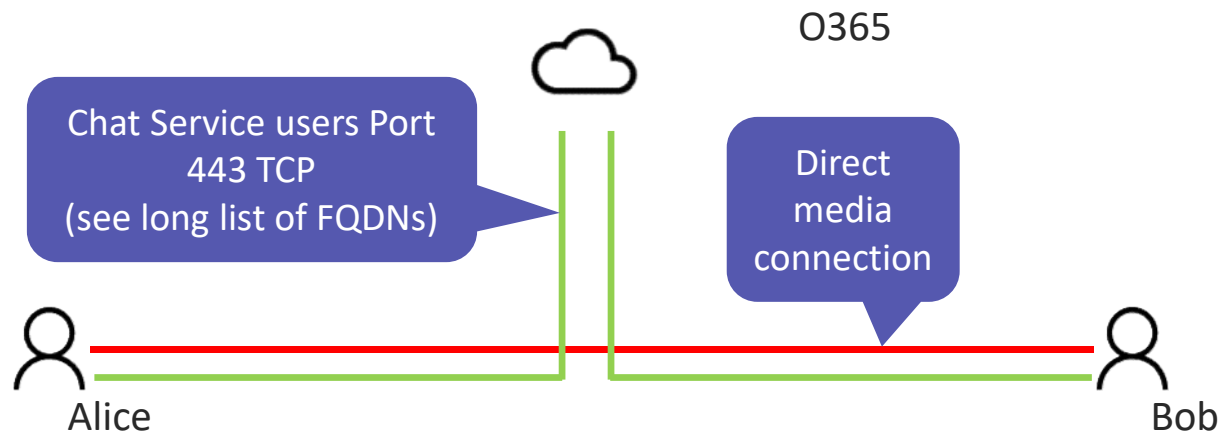
# Conferencing flows (Continued)

- Video
  - Each participant sends video
  - Each participant can receive up to four video streams
  - When more than four participants, the most recent four speakers will be shown

# Conferencing flows (Continued)

- Desktop Sharing
  - Leverages a video stream
  - One user sends, all other users receive
  - Stream based on receiver capability

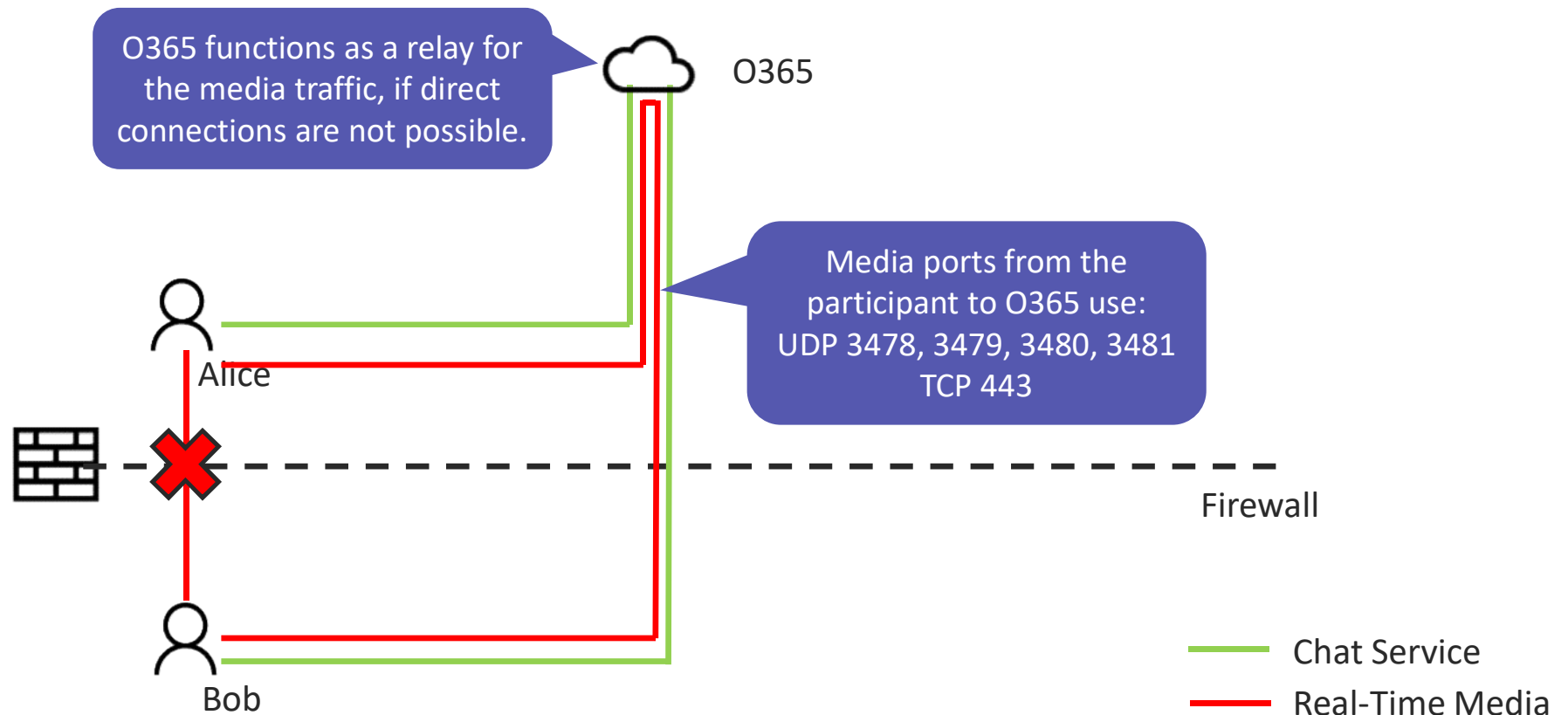
# Call Flows – 1:1 Call Direct



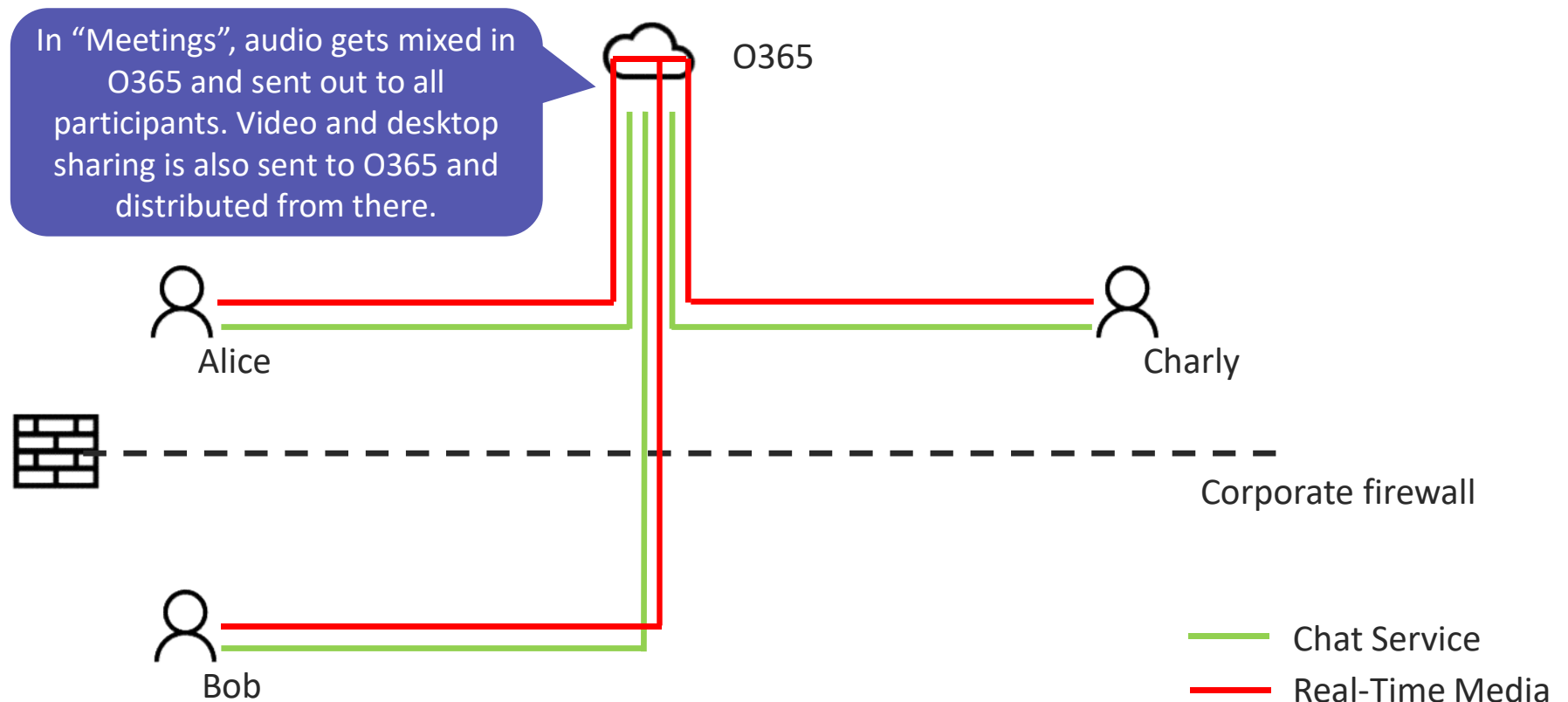
- Chat Service
- Real-Time Media



# Call Flows – 1:1 Call Firewalled



# Call Flows – Multi-Party



# UDP vs. TCP

## TCP

- Requires each packet to be acknowledged by the receiver
- Lost packets are resent, causing subsequent packets to be delayed

## UDP

- “Fire and forget”, what is lost is lost

# Real Time Communication

- Teams can use TCP or UDP
- For real time communication, we want packets quickly
- If we lose (some) packets, we do not really care: audio and video might experience glitches, but session continues

# Networking best practices

- Allow UDP traffic for better quality
  - UDP 3478, 3479, 3480, 3481
- Make sure UDP traffic is not blocked by
  - Routers must be configured to allow Microsoft Teams traffic to travel directly to Office 365
  - Proxies should always be bypassed

# Using Proxies will Impact Quality

- Media might be forced over TCP instead of UDP
- Connection issues to Office 365 might occur
- Quality will be impacted in all cases

# Wireless

- Real-time communication is different (and difficult)
  - Packet loss, jitter and latency
  - Streaming HD Videos isn't the same as HD Video Calling
- Access Point coverage
  - Over vs Under provisioned
  - Work with your networking team

Microsoft Teams

# Bandwidth Considerations

Microsoft Teams

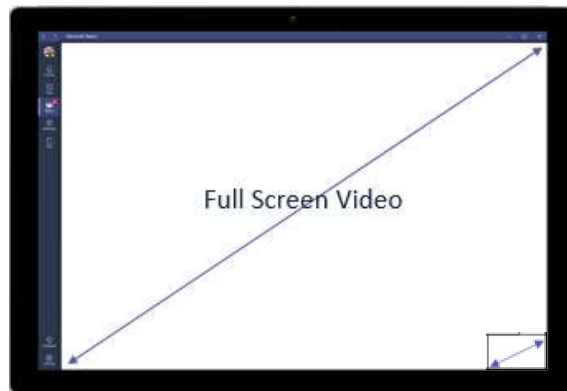


# Bandwidth Planning – Audio

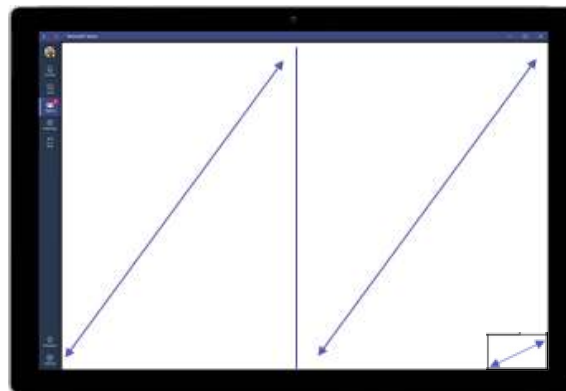
	Max number of Streams	Total Maximum upload or download bit rates (Kbps)
N Participants	1	100

Microsoft Teams

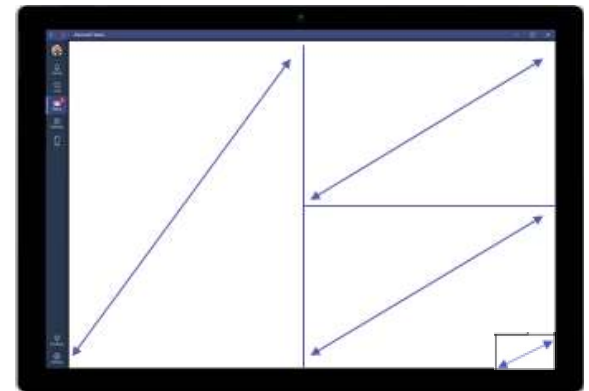
# Meeting layouts



Single video



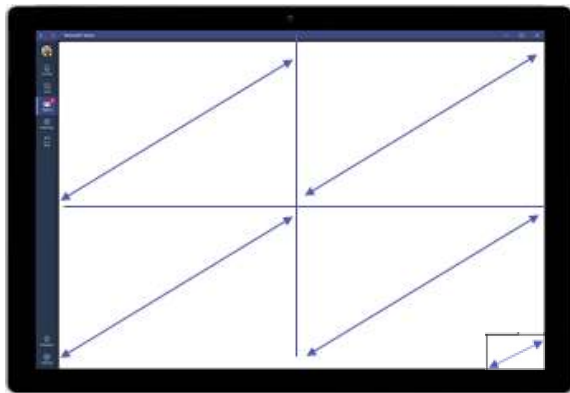
Two videos



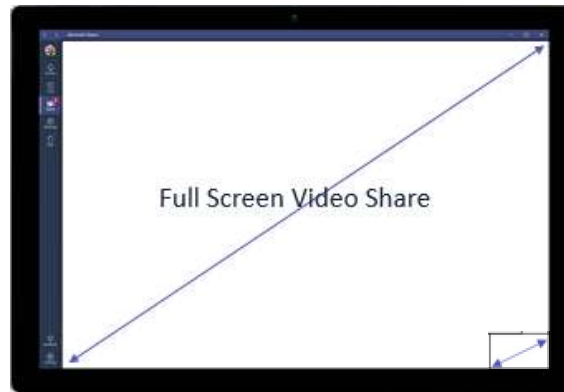
Three videos

Microsoft Teams

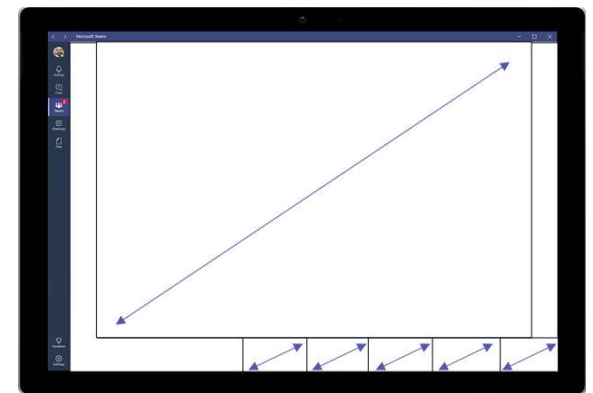
# More meeting layouts



Four videos



Viewing  
screen sharing



Viewing  
screen sharing  
plus videos

# Bandwidth Planning – 1080p Screens: Download

	Max Resolutions	Total Maximum download bit rates (Mbps)
2 Participants	1 * 1920x1080	4
3 Participants	2 * 1920x1080 (Full Bleed)	8
4 Participants	1 * 1920x1080 + 2 * 960x540	7
5+ Participants	4 * 960x540	6
Screen Sharing (Only)	1 * 1920x1080	4
Screen Sharing + participant videos [N=0-4]	1 * 1920x1080 + N * 424x240	4 + (N*350 Kbps)

Microsoft Teams

# Bandwidth Planning – 1080p Screens: Upload

	Max Resolutions	Total Maximum upload bit rates (Mbps)
2 Participants	1 * 1920x1080	4
3 Participants	1 * 1920x1080 + 1 * 1280x720	6.5
4 Participants	1 * 1280x720 + 1 * 960x540	4
5+ Participants	1 * 960x540	1.5
<b>Active</b> screen sharing (Only)	1 * 1920x1080	4
<b>Active</b> screen sharing + participant videos	1 * 1920x1080 + 1 * 424x240	~4.34

Microsoft Teams

# Meetings Bandwidth Usage – Different Resolutions Screens or Viewing Layouts: Upload

	Max Resolutions	Total Maximum upload bit rates (Mbps)
2 Participants	1 * 1920x1080	4
3 Participants	1 * 1920x1080 + 1 * 1280x720	6.5
4 Participants	1 * 1920x1080 + 1 * 1280x720 + 1 * 960x540	8
5+ Participants	1 * 1920x1080 + 1 * 1280x720 + 1 * 960x540 + 1 * 640x360	8.8
Video Based Screen Sharing (Only)	1 * 1920x1080 (Screen)	4
N Participant + VBSS	1 * 1920x1080 (Screen) + 1 * 1920x1080 (Video) + 1 * 1280x720 + 1 * 960x540	12

# Office 365 Admin Portal

Microsoft Teams

# IT Admin Portal

- All settings can be adjusted from O365 Admin Center. Find Settings then navigate to Services & Add-Ins.
- All experience settings are at the Tenant level.
- All users at launch will have access to Microsoft Teams once the Tenant has Microsoft Teams enabled.

Microsoft Teams



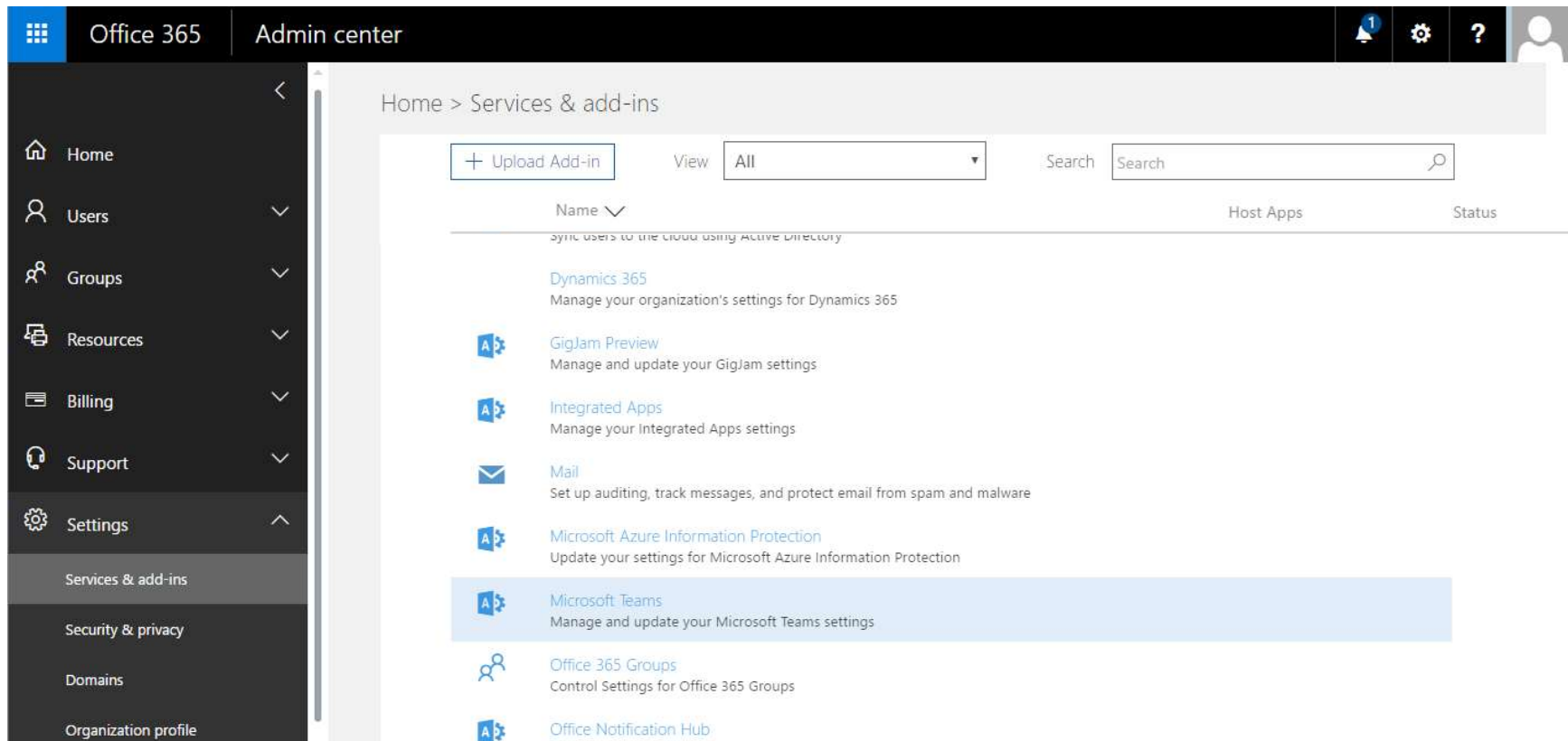
# Office 365 Licensing Requirements

Microsoft Teams is currently available in preview to customers with

- Business Essentials
- Business Premium
- Enterprise E1, E3, and E5 subscriptions.
- Existing E4 subscriptions (Retired SKU)



# IT Admin Portal

During this initial preview launch of Microsoft Teams, the product will be disabled by default for all organizations. IT Admins need to go into the Admin Portal and enable the product for your organization.



Microsoft Teams

# Enable Microsoft Teams

 Microsoft Teams 

Turn Microsoft Teams on or off for your entire organization



☐ Off


Save

Close


Microsoft Teams


# General Tenant Level Settings


 Microsoft Teams 

Turn Microsoft Teams on or off for your entire organization  On

^ **General**

Show organization chart in personal profile  On

Allow email notifications  On

Send your diagnostic data to Microsoft and help improve Microsoft Teams  Off

^ **Teams & Channel**

^ **Calls & Meetings**

^ **Messaging**

^ **Tabs**



^ **Bots**


Save

Close

Microsoft Teams

# Teams management


 Microsoft Teams 

Turn Microsoft Teams on or off for your entire organization  On

---

▼ **General**

^ **Teams & Channel**

[Go to Groups control panel to manage Team creation, owner and member assignments](#) 

---

▼ **Calls & Meetings**

▼ **Messaging**

▼ **Tabs**

▼ **Bots**



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
Save

Close

Microsoft Teams

# Calls and Meetings

 Microsoft Teams 

Turn Microsoft Teams on or off for your entire organization  On

▼


 General


▼

 Teams & Channel

▲

**Calls & Meetings**

Allow video in meetings  On

Allow screen sharing in meetings  On

▼

 Messaging

▼

 Tabs

▼



 Bots


Save

Close

Microsoft Teams

# Messaging

 Microsoft Teams 

Turn Microsoft Teams on or off for your entire organization  On


---

▼ **General**

▼ **Teams & Channel**


▼ **Calls & Meetings**


▲ **Messaging**

Add fun animated images to the conversations  On

Content Rating  

Strict ▼

Add customizable images from the internet  On

Add editable images to the conversations  On

---

▼ **Tabs**

▼ **Bots**



Save


Close





Microsoft Teams


# Tabs


 Microsoft Teams 


Turn Microsoft Teams on or off for your entire organization  On


 **General**


 **Teams & Channel**

 **Calls & Meetings**

 **Messaging**

 **Tabs**

Enable extension tabs in Microsoft Teams  On

 **Bots**



Save


Close

Microsoft Teams



# Bots

 Microsoft Teams 

Turn Microsoft Teams on or off for your entire organization  On

---

▼ **General**

---

▼ **Teams & Channel**

---

▼ **Calls & Meetings**

---


▼ **Messaging**


---

▼ **Tabs**

---

▲ **Bots**

Enable bots in Microsoft Teams to help users complete more tasks easily  On

Enable side loading of external Bots  On

---

Save

Close

Microsoft Teams

# Client Rollout

Microsoft Teams

# Platform Requirements

## Clients:

- Windows 7+ (7, 8, 8.1, 10)
- Mac OSX 10.10+
- Windows Phone 10.0.10586+
- Android 4.4+
- iOS (iPhone and iPad) 9+

## Web:

- Chrome: 51.0+
- Firefox: 47.0+
- Edge: 12+
- Microsoft Internet Explorer: 11+
- Safari coming soon.

# Desktop Client

- Desktop client required for Real Time Communication
- The latest version of Microsoft Teams is located at <https://teams.microsoft.com/downloads> for all available platforms
- Users can install directly from <https://teams.microsoft.com>
- Distribute Microsoft Teams using your existing SCCM, Casper, or other channels

# Mobile Clients

- The Microsoft Teams client available in the respective app stores
  - Apple's App Store
  - Google Play Store
  - Microsoft's Store
- The client cannot be side-loaded or distributed through MDM

# Client Updates

- Desktop clients will all auto-update
- Mobile clients update through the app store
- Web Client will also auto-update

# Chat Services

Microsoft Teams

# Chat Message Storage

- Customer data is encrypted at rest and in transit
- All data store in regional clouds based on AAD Settings
- Microsoft Teams Chat Service runs within the O365 compliance boundary
- Microsoft Teams retains all messages
- Microsoft Teams retains deleted messages for at least 7 days and at most 30 days before messages are permanently deleted



# Microsoft Teams Compliance

- Microsoft Teams was architected with compliance, authentication and privacy in mind.
- Microsoft Teams is targeting Tier-C Compliance
  - Industry standards: ISO 27001, ISO 27018, EUMC, SSAE16 SOC1 Type I & II, SOC2 Type I and II, HIPPA, FERPA, GLBA
- Protects data securely using strong security measures including two factor authentication, hard passwords and access policies.

# Resources

Microsoft Teams

# Download Links

- Desktop Clients  
<https://teams.microsoft.com/downloads>
- Apple's App Store – iOS  
<http://aka.ms/iosteam>
- Google Play Store – Android  
<http://aka.ms/androidteam>
- Microsoft's Store – Windows Phone  
<http://aka.ms/wpteam>

# Reference Items

- Microsoft Teams Readiness  
<https://aka.ms/microsoft-teams-readiness>
- Administrator settings for Microsoft Teams  
<https://support.office.com/article/3966a3f5-7e0f-4ea9-a402-41888f455ba2>
- Frequently asked questions about Microsoft Teams – Admin Help  
<https://support.office.com/article/05cbe533-2181-4e95-a4b0-52cd7695fafc>
- Office 365 URLs and IP address ranges  
<https://support.office.com/en-us/article/Office-365-URLs-and-IP-address-ranges-8548a211-3fe7-47cb-abb1-355ea5aa88a2>
  - RSS Feed: <https://support.office.com/en-us/o365ip/rss>

# Development Documentation

- Microsoft Teams Tabs Platform

<https://aka.ms/microsoftteamstabsplatform>

- Bots in Microsoft Teams

<https://aka.ms/microsoftteamsbotsplatform>

- Office Connectors in Microsoft Teams

<https://aka.ms/microsoftteamsconnectorsplatform>

# Product Videos

For more product information, you can check out the videos below:

- Product Walkthrough:  
<https://support.office.com/en-us/article/Microsoft-Teams-Quick-Start-422bf3aa-9ae8-46f1-83a2-e65720e1a34d?ui=en-US&rs=en-US&ad=US#ID0EAABAAA=Overview>
- Onboard your Teams  
<https://support.office.com/article/702a2977-e662-4038-bef5-bdf8ee47b17b>
- Teams and Channels  
<https://support.office.com/article/c3d63c10-77d5-4204-a566-53ddcf723b46>
- Use Tabs  
<https://support.office.com/article/7350a03e-017a-4a00-a6ae-1c9fe8c497b3>

# Product Videos (Continued)

For more product information, you can check out the videos below:

- Productive Conversations  
<https://support.office.com/article/99d33aaa-0743-47c6-a476-eb0a24abcb7e>
- Private Conversations and Calling  
<https://support.office.com/article/a864b052-5e4b-4ccf-b046-2e26f40e21b5>
- Meet now  
<https://support.office.com/article/26e06837-853d-4df1-a729-06bf700d4ecf>
- Schedule a meeting  
<https://support.office.com/article/ba44d0fd-da3c-4541-a3eb-a868f5e2b137>

# Continue to Conversation

<https://aka.ms/msteamscommunity>



Thank you

# Appendix Items

# What is Tier C Compliance

Within the Microsoft compliance framework, Microsoft classifies Office 365 applications and services into four categories. Each category is defined by specific compliance commitments that must be met for an Office 365 service, or a related Microsoft service, to be listed in that category. Services in compliance categories C and D that have industry leading compliance commitments are enabled by default while services in categories A and B come with controls to enable or to disable these services for an entire organization. Details can be found in this [Compliance Framework for Industry Standards and Regulations](#).