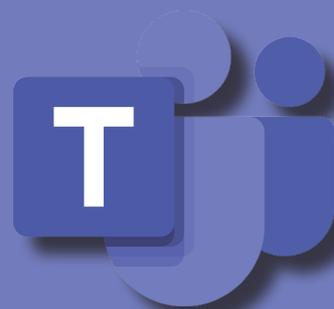




TechNote: TOA IP Audio Systems and CyberGate

Version: 1.0.1 ENG
Date: 10-05-2023



Configure TOA IP Audio Systems
for the CyberGate service

CyberGate

Microsoft Teams is the hub for team collaboration in Microsoft Office 365 that integrates people, content, conversations and tools your team needs. Via the CyberGate application that runs in Microsoft Azure you can now connect TOA IP Audio Systems to your Microsoft Teams environment. Microsoft Teams users can set up calls to TOA IP Audio products – with 2-way audio – on the Teams desktop client, Teams desk phone or Teams Smartphone app.

CyberGate is a subscription based Software-as-a-Service (SaaS) hosted in Azure. With CyberGate there is:

*no need to setup a hosting environment,
no need to download or install any software from CyberTwice or a 3rd party,
no need to install additional Virtual Machines,
no need for a Session Border Controller (SBC) or extra licenses for your existing SBC
no need for to get additional PSTN like phone numbers for your SIP intercoms.*

! Note: For instructions on how to purchase and configure the CyberGate service, see our Tech Note: 'Connect a SIP Intercom to MS Teams using the CyberGate service'. (<https://support.cybertwice.com/knowledgebase.php?article=6>) !

TOA IP Audio Systems

For this document the following TOA IP Audio equipment is used to connect to the CyberGate service (from now on named 'CyberGate').

This document applies to the following TOA devices:

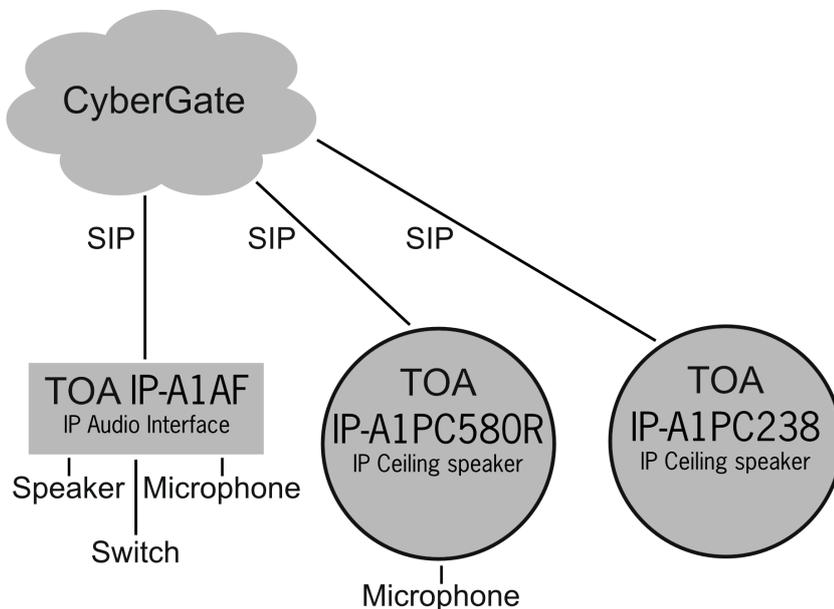
- TOA IP Paging Gateway IP-A1PG
- TOA IP Audio Interface IP-A1AF
- TOA IP Ceiling speaker IP-A1PC238
- TOA IP Ceiling Speaker IP-A1PC580R

The following scenarios are tested:

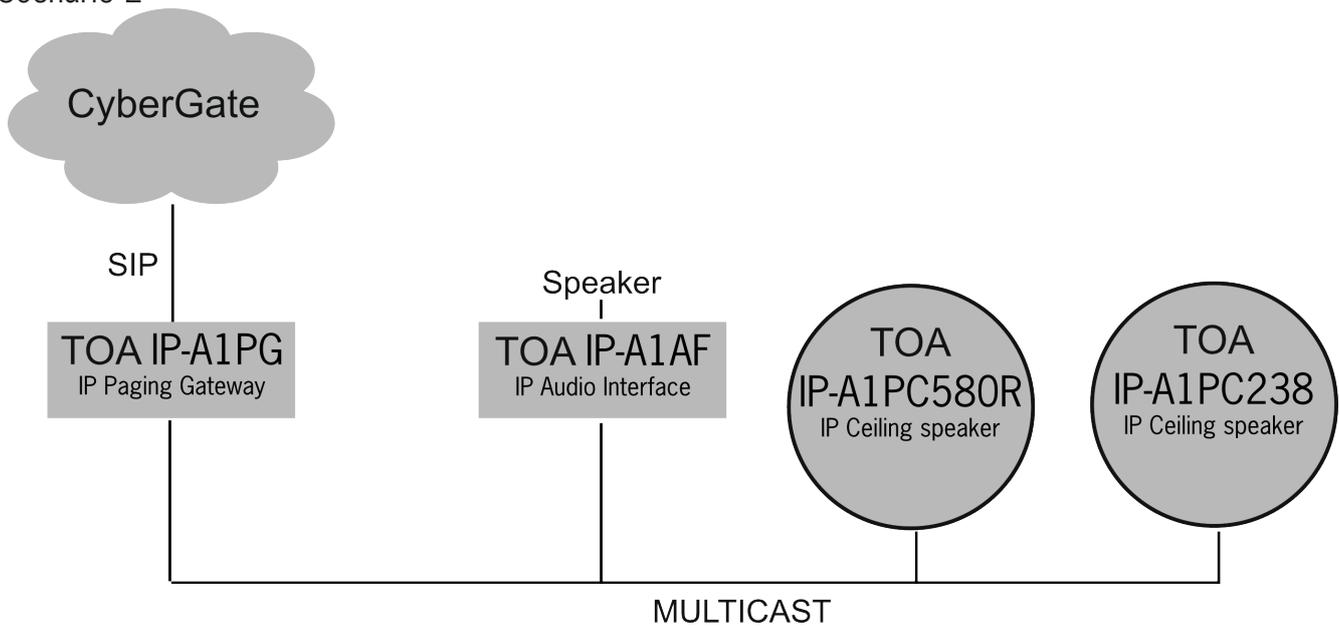
1. The IP Audio Interface and the two IP Ceiling speakers each have an individual SIP connection to CyberGate. The IP Audio Interface has an attached speaker, microphone and switch, so initiating calls to Teams using the switch is also possible (it will act as an intercom)
2. The IP Paging Gateway has a SIP connection to CyberGate and uses Multicast to connect to the IP Audio Interface and the two IP Ceiling speakers (zone-paging)

! Note: In scenario 2 (using the IP Paging Gateway) the audio is Paging only (one-way audio). Scenario 1 also supports audio from a microphone to Microsoft Teams (two-way audio). !

Scenario 1



Scenario 2



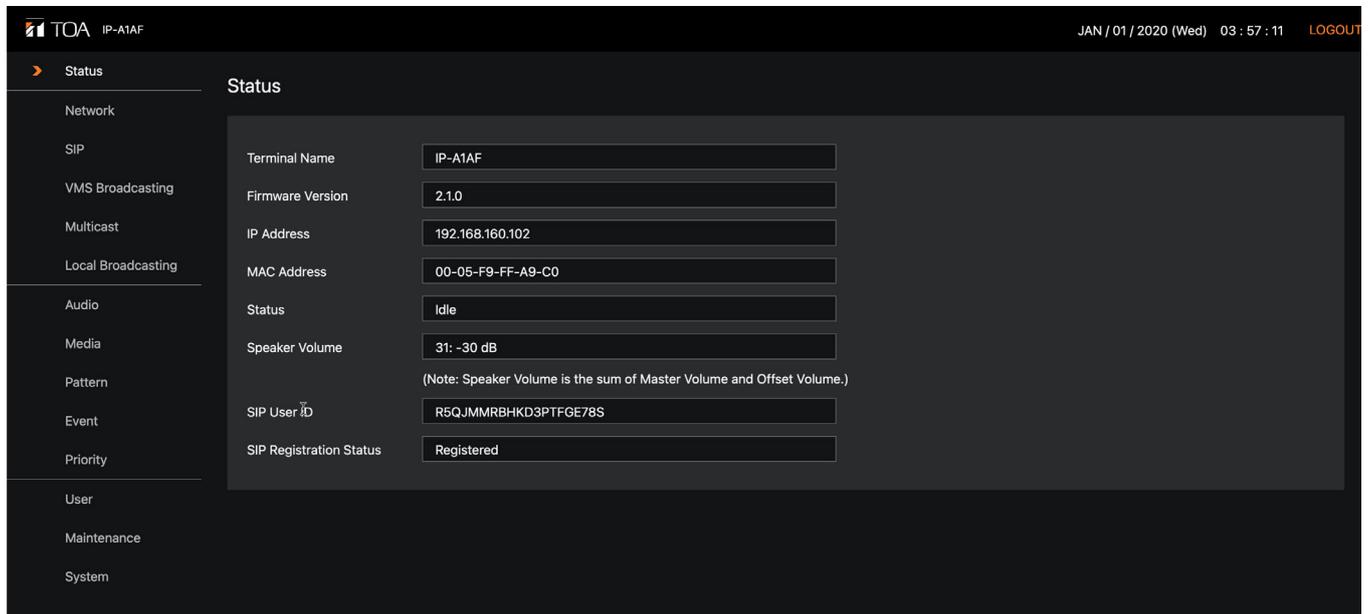
The first section of this manual (in **RED**) describes scenario 1, direct calling to an IP Speaker or IP Audio interface.

The second section of this manual (in **GREEN**) describes scenario 2, configuration of the IP Paging Gateway to be able to call to different other IP Paging devices using DTMF (zone-paging).

Follow the next steps to configure the TOA to connect it to CyberGate.

Connect the TOA

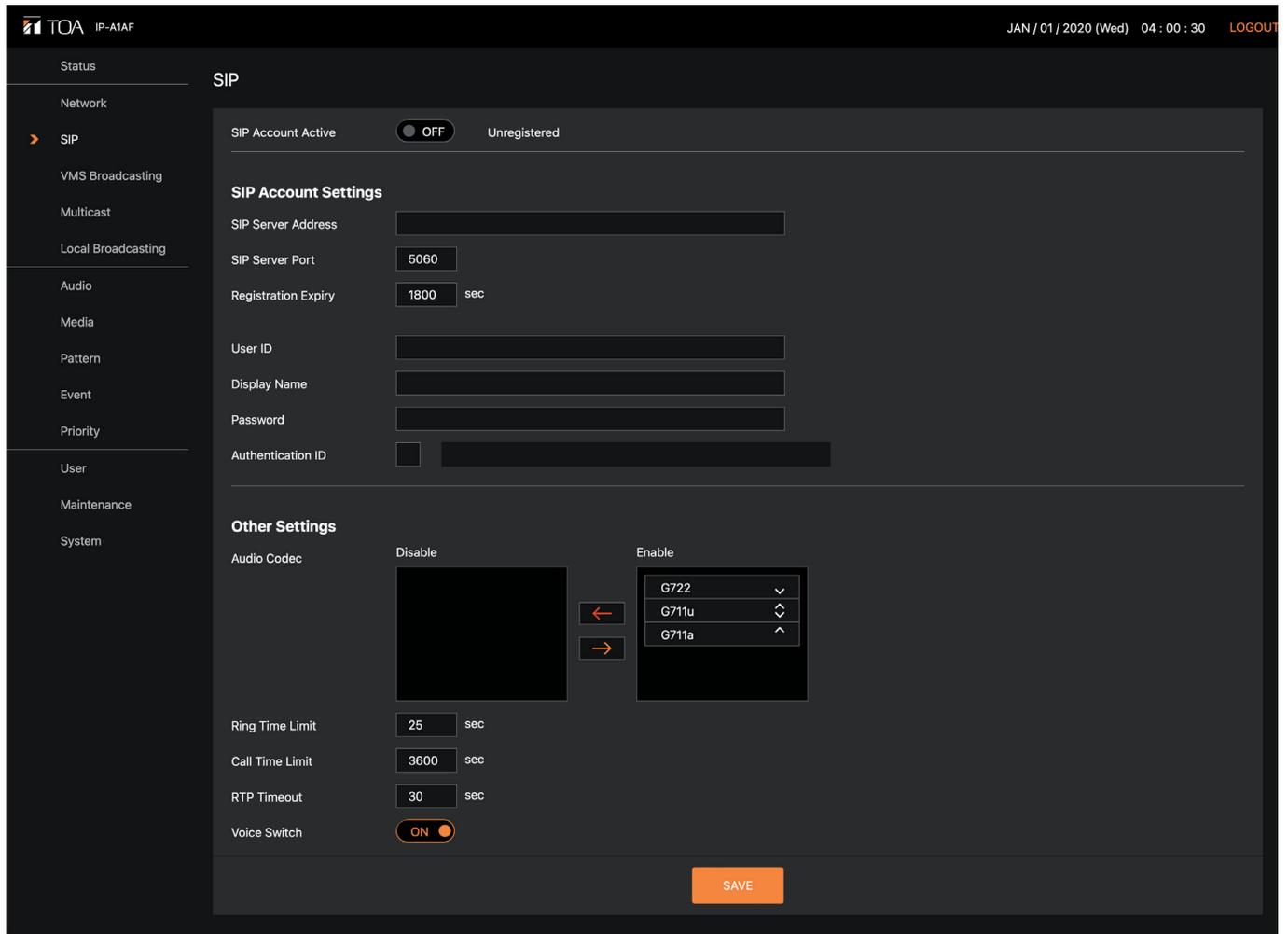
Connect the TOA to the network, power it on and open a web browser to its IP-address.
Sign in with the configured or supplied password of the TOA.



The screenshot displays the web interface for a TOA IP-A1AF device. The top navigation bar includes the TOA logo, the model number 'IP-A1AF', the date and time 'JAN / 01 / 2020 (Wed) 03 : 57 : 11', and a 'LOGOUT' link. A left sidebar contains a menu with items: Status (selected), Network, SIP, VMS Broadcasting, Multicast, Local Broadcasting, Audio, Media, Pattern, Event, Priority, User, Maintenance, and System. The main content area is titled 'Status' and lists the following configuration details:

Terminal Name	IP-A1AF
Firmware Version	2.1.0
IP Address	192.168.160.102
MAC Address	00-05-F9-FF-A9-C0
Status	Idle
Speaker Volume	31: -30 dB
(Note: Speaker Volume is the sum of Master Volume and Offset Volume.)	
SIP User ID	R5QJMMRBHKD3PTFGE78S
SIP Registration Status	Registered

Navigate to the SIP menu.



Provide the following information:

SIP Account Settings	
SIP Server Address	cybergate.cybertwice.com
User ID	Choose a User ID that describes this device (in this example 'testdevice')
Display Name	Same as the User ID
Password	Use the Password provided by the CyberGate Management Portal
Authentication ID	Use the Username provided by the CyberGate Management Portal

The screenshot displays the TOA IP-A1AF web interface. The top navigation bar includes the TOA logo, the model number IP-A1AF, the date and time (JAN / 01 / 2020 (Wed) 04 : 17 : 30), and a LOGOUT button. The left sidebar contains a menu with options: Status, Network, SIP (selected), VMS Broadcasting, Multicast, Local Broadcasting, Audio, Media, Pattern, Event, Priority, User, Maintenance, and System. The main content area is titled 'SIP' and shows the following settings:

- SIP Account Active:** ON (toggle), Unregistered
- SIP Account Settings:**
 - SIP Server Address: cybergate.cybertwice.com
 - SIP Server Port: 5060
 - Registration Expiry: 1800 sec
 - User ID: testdevice
 - Display Name: testdevice
 - Password: [masked]
 - Authentication ID: LL18QX5XPDR6JUR84QE4
- Other Settings:**
 - Audio Codec: Disable (empty) | Enable (G722, G711u, G711a)
 - Ring Time Limit: 25 sec
 - Call Time Limit: 3600 sec
 - RTP Timeout: 30 sec
 - Voice Switch: ON (toggle)

An orange 'SAVE' button is located at the bottom right of the settings panel.

Click the orange Save button when done.

Before the settings are active, the TOA has to reboot (see the Maintenance menu for the 'Reboot' button).

After reboot, the SIP status should be changed to Registered.

The screenshot displays the TOA IP-A1AF web interface for SIP configuration. The top navigation bar shows the TOA logo, the model IP-A1AF, the date and time (JAN / 01 / 2020 (Wed) 04 : 20 : 28), and a LOGOUT link. A left sidebar contains a menu with categories: Status, Network, SIP (selected), VMS Broadcasting, Multicast, Local Broadcasting, Audio, Media, Pattern, Event, Priority, User, Maintenance, and System. The main content area is titled 'SIP' and shows the following configuration:

- SIP Account Active:** ON (indicated by a yellow circle) and Registered.
- SIP Account Settings:**
 - SIP Server Address: cybergate.cybertwice.com
 - SIP Server Port: 5060
 - Registration Expiry: 1800 sec
 - User ID: testdevice
 - Display Name: testdevice
 - Password: [masked]
 - Authentication ID: LL18QX5XPDR5JUR84QE4
- Other Settings:**
 - Audio Codec: A toggle between 'Disable' and 'Enable'. The 'Enable' side shows a dropdown menu with options G722, G711u, and G711a.
 - Ring Time Limit: 25 sec
 - Call Time Limit: 3600 sec
 - RTP Timeout: 30 sec
 - Voice Switch: ON (indicated by a yellow circle)

A 'SAVE' button is located at the bottom right of the configuration area.

If an external switch is connected to the TOA, configure a TOA Event to trigger an outgoing call.

Navigate to the Event menu.

TOA IP-A1AF JAN / 01 / 2020 (Wed) 00 : 03 : 02 LOGOUT

Status

Network

SIP

VMS Broadcasting

Multicast

Local Broadcasting

Audio

Media

Pattern

> Event

Priority

User

Maintenance

System

Event

Control-in

Control-in 1

Action

Signal Mode

Control-in 2

Action

Signal Mode

Action Settings

SIP

SIP Target 1

SIP Target 2

Calling Interrupt ON

Offset Volume

Control-Out

SIP

VMS Broadcasting

Local Broadcasting

SAVE

Provide the following information:

Control-in	
Control-in 1 Action	cybergate.cybertwice.com
Action Settings	
SIP Target 1	100

SIP Target 1 is the destination address to call as soon as the switch connected to Control-in 1 is pushed.

The configured number '100' has to correspond with a Multi-ring group called '100', configured in the CyberGate admin portal. This Multi-ring group can contain one or more Teams users in your organisation. As soon as this Multi-ring group is dialed, all Teams users in this Multi-ring group will be called simultaneously, the first one to answer will be connected to the TOA.

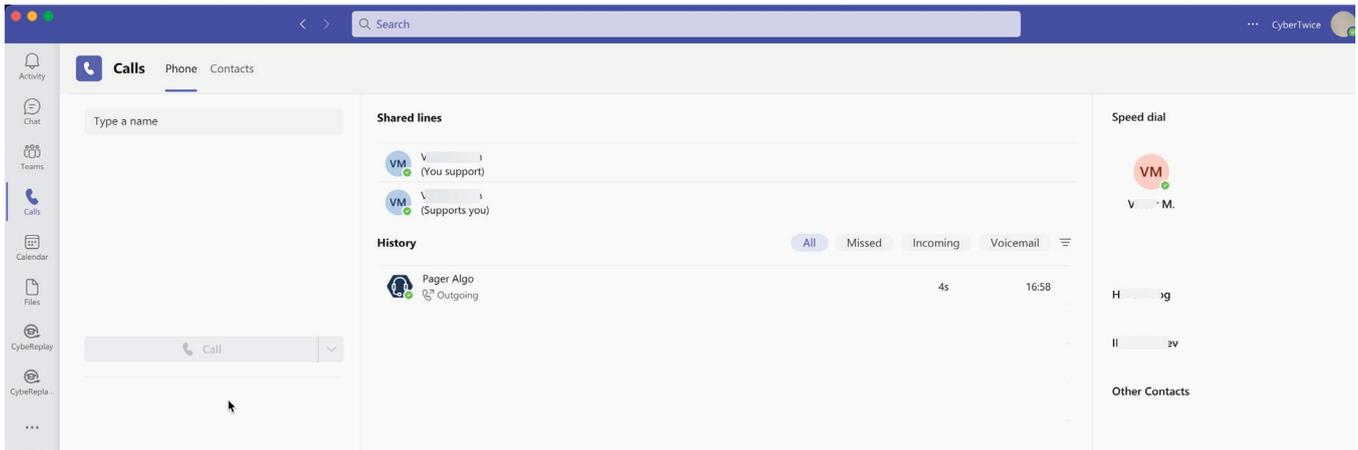
Click the orange Save button when done.

Before the settings are active, the TOA has to reboot (see the Maintenance menu for the 'Reboot' button).

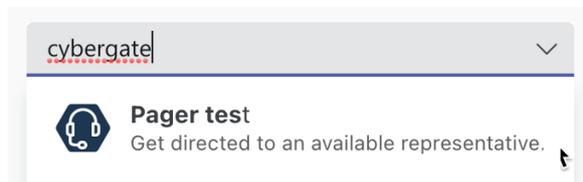
The basic configuration of the TOA for use with CyberGate is done!

Before calls can be initiated from Microsoft Teams to the TOA or from the TOA to Teams, additional configuration in the CyberGate Admin portal is necessary. Please see the blue section of this manual for instructions on how to configure the Management portal.

To initiate a call from Microsoft Teams, login to Microsoft Teams and navigate to the 'Calls' menu.



You can either type the (Display)name of the TOA directly in the call field (at 'Type a name') or search for 'cybergate'.



It will show all of your CyberGate Devices. Select the Pager to call and click the blue 'Call' button.

A call to the TOA will be initiated and the TOA will answer automatically.

Configuring a TOA IP Paging Gateway

The TOA IP Paging Gateway can broadcast audio from Microsoft Teams to different TOA IP Paging devices using Multicast.

Each TOA IP Paging device has its own Multicast address. During the Teams call you can select the desired TOA Paging Device using DTMF keys in Teams.

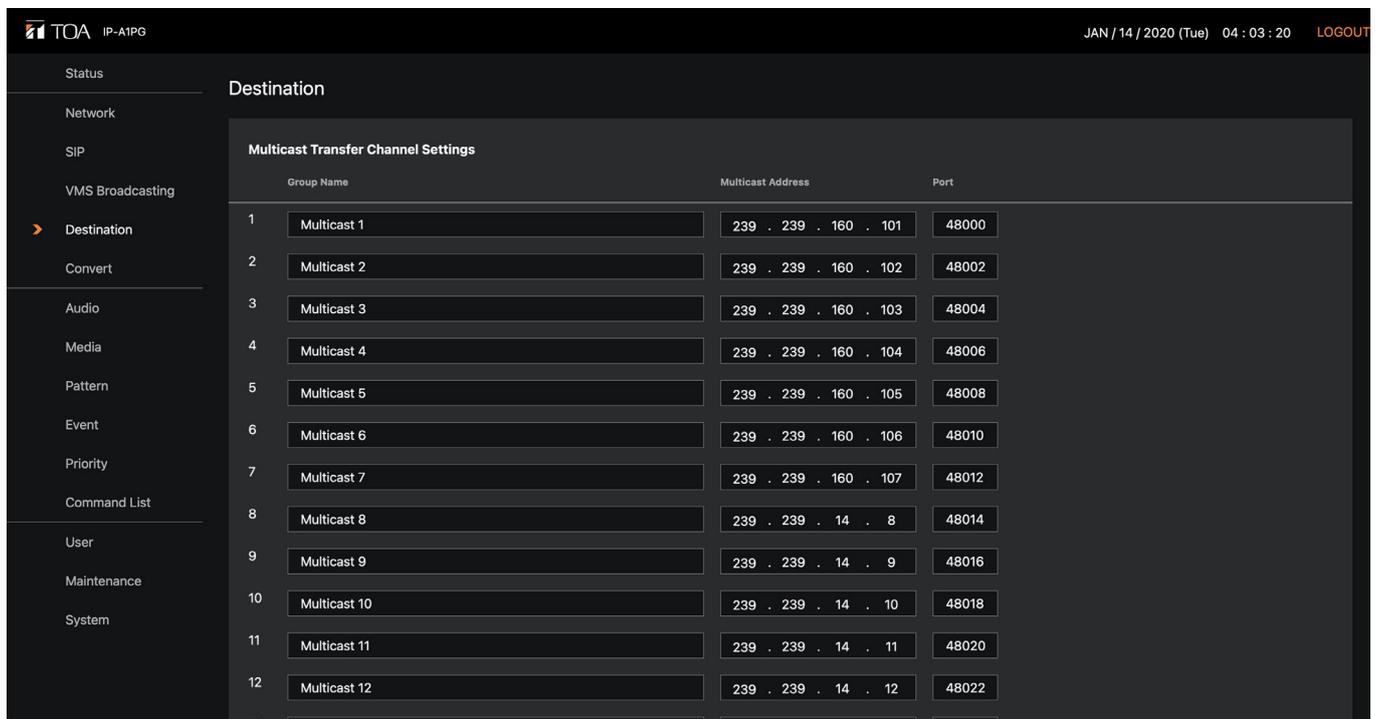
First step is to configure the different devices in your TOA IP Paging Gateway.

Register the TOA IP Paging Gateway the same way as described in the first section of this manual. After that, navigate to the Destination menu.

Modify the following information:

Destination	
Group Name	Provide a name for the Multicast group (in this example the names remained default 'Multicast 1, Multicast 2 etc)
Multicast Address	Provide the correct Multicast address for this Multicast group *

* Each IP Paging Device has its own Multicast address. To address a specific IP Paging Device, use its Multicast address in this overview.



The screenshot shows the TOA IP-APG web interface. The top navigation bar includes the TOA logo, 'IP-APG', the date 'JAN / 14 / 2020 (Tue) 04 : 03 : 20', and a 'LOGOUT' button. A left sidebar contains a menu with items: Status, Network, SIP, VMS Broadcasting, Destination (highlighted with an orange arrow), Convert, Audio, Media, Pattern, Event, Priority, Command List, User, Maintenance, and System. The main content area is titled 'Destination' and contains a section for 'Multicast Transfer Channel Settings'. This section features a table with three columns: 'Group Name', 'Multicast Address', and 'Port'. The table lists 12 entries, each with a 'Group Name' (Multicast 1 through Multicast 12), a 'Multicast Address' (e.g., 239 . 239 . 160 . 101), and a 'Port' (e.g., 48000).

Group Name	Multicast Address	Port
Multicast 1	239 . 239 . 160 . 101	48000
Multicast 2	239 . 239 . 160 . 102	48002
Multicast 3	239 . 239 . 160 . 103	48004
Multicast 4	239 . 239 . 160 . 104	48006
Multicast 5	239 . 239 . 160 . 105	48008
Multicast 6	239 . 239 . 160 . 106	48010
Multicast 7	239 . 239 . 160 . 107	48012
Multicast 8	239 . 239 . 14 . 8	48014
Multicast 9	239 . 239 . 14 . 9	48016
Multicast 10	239 . 239 . 14 . 10	48018
Multicast 11	239 . 239 . 14 . 11	48020
Multicast 12	239 . 239 . 14 . 12	48022

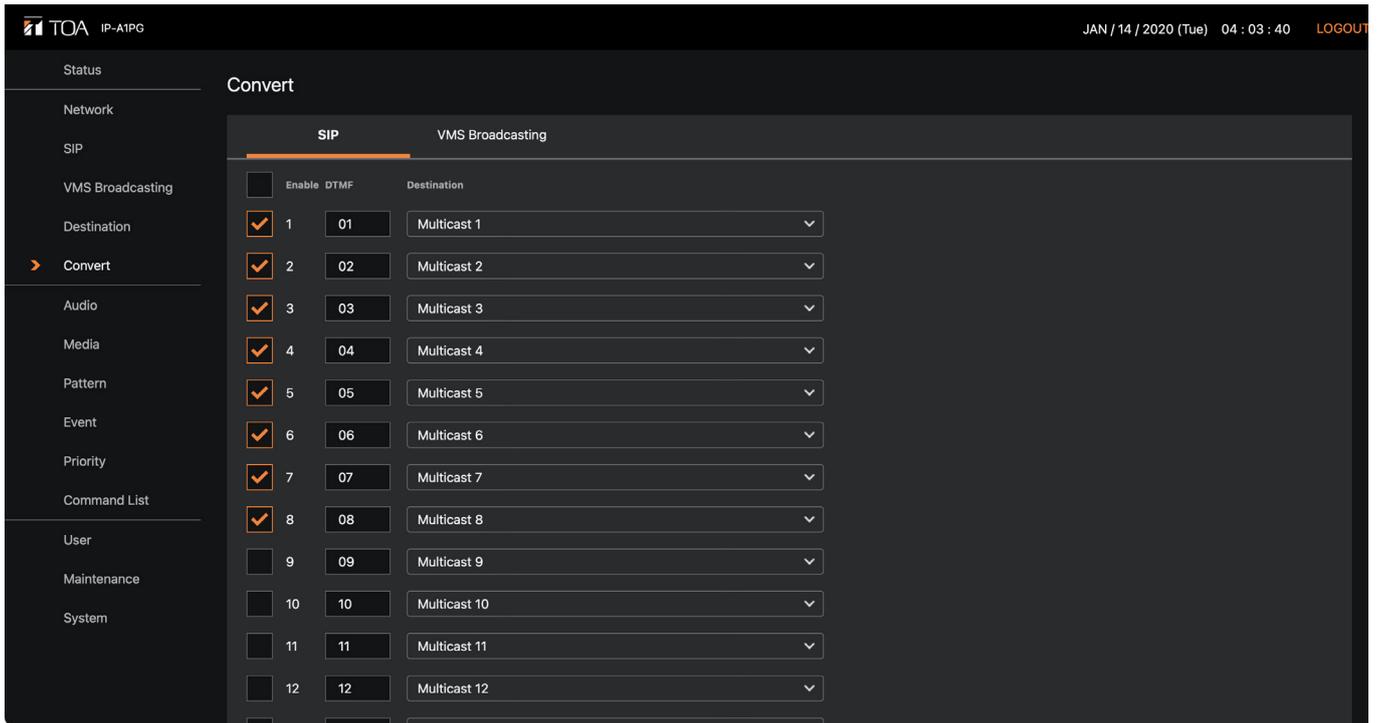
Click the orange Save button when done.

Navigate to the Convert menu.

Use the settings in this menu to configure a DTMF key combination for a specific IP Paging Device (zone-paging).

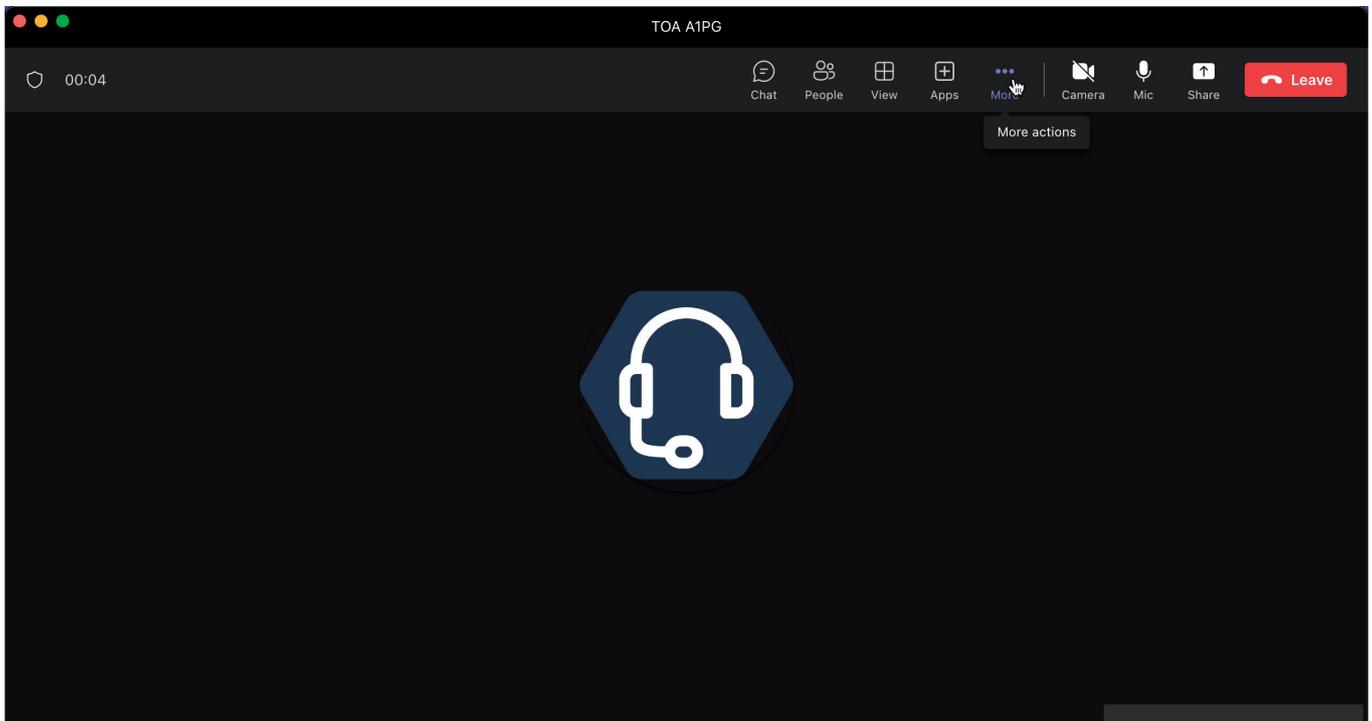
Modify the following information:

SIP	
Enable DTMF	Enable DTMF for a specific Multicast group
DTMF	Select the DTMF key combination

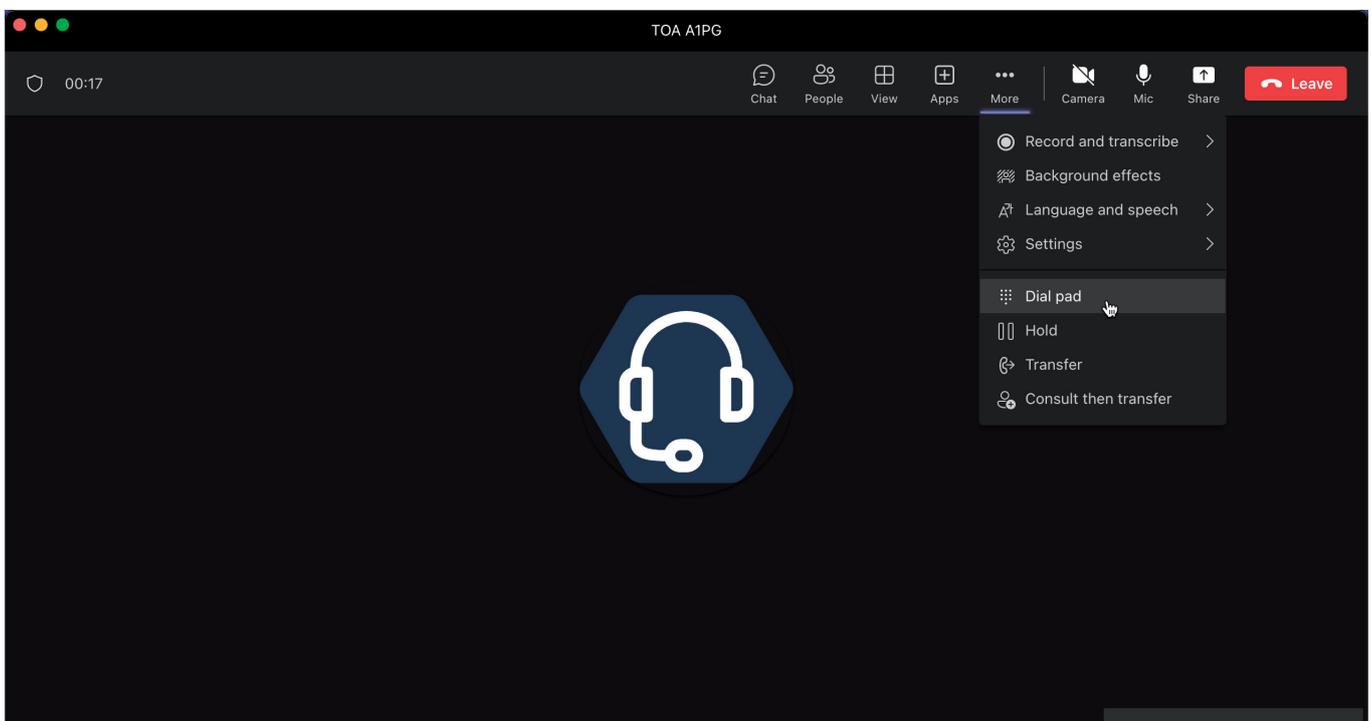


Click the orange Save button when done.

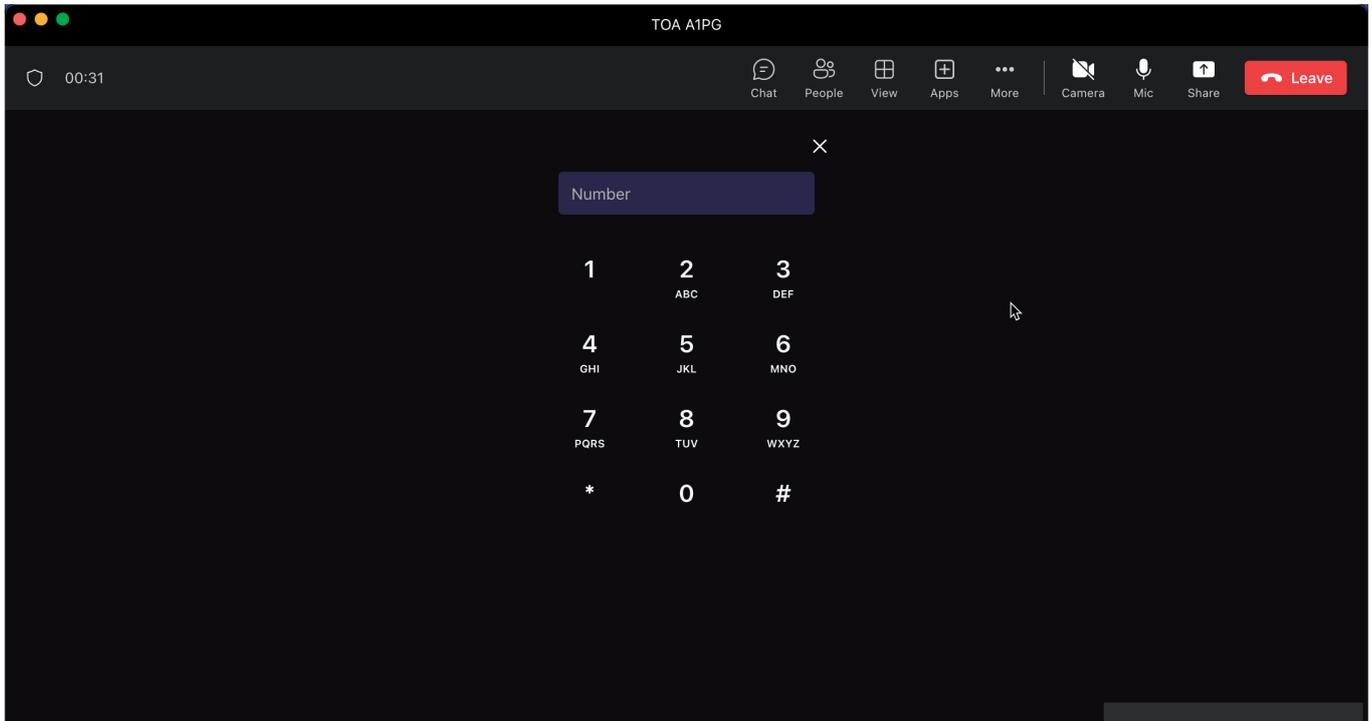
Configuration of the TOA IP Paging Gateway is now done. When placing a call from Teams to the TOA IP Paging Gateway it will answer. After answering, open the 'More actions' menu on top of the calling screen.



Select the 'Dial pad'.



The 'Dial pad' appears. Type the code of the desired TOA IP Paging device to be connected to that device.



When connected to that device, the TOA IP Paging Gateway will play a confirmation sound through Microsoft Teams so you know that you're connected and can start paging.

CyberGate Management Portal Configuration

Navigate to the following URL: <https://admin.cybergate.cybertwice.com>

Log in to the admin portal using a Microsoft account with admin privileges and navigate to the Basic-Device menu.

CyberTwice Microsoft Temp Tenant 1

ADMINISTRATION

- Licensing

BASIC

- Global
- Device
- Multi-ring

CAMERA

- Meeting

TEAMS APP

- Availability
- Device

Device settings

Create a device entry for each SIP device you are connecting to CyberGate. Each created device entry contains an authentication username and password to be used in the configuration of your SIP device together with 'cybergate.cybertwice.com' as the registrar address. For detailed instructions on how to configure the SIP device click [here](#) for the brand specific manuals.

To make the display name visible in Teams, some configuration in the Teams environment is required. This can be done automatically by executing the PowerShell script that can be downloaded with the button below. The user to execute this script must have either the Global Administrator role or both the User Administrator role and the Teams Administrator role. For more information see the [manual](#).

[Download](#)

[Add device](#)

Display name	Authentication username	Password	Licensed	Recorded	Teams to device	Action
<i>Other locations</i>						
Pager test	M9FYLIUDDOOK73TQ6ITC	GVC ●●●●●●●●	yes	no	no	

It displays the device that is used to configure the TOA. If the display name of the device shows the warning symbol, it is necessary to download and run the Feature configuration PowerShell script. If no warning sign is shown, skip this step.

- Click on the blue 'Download' button to download the script
- Open PowerShell on your PC with administrator privileges
- Run the 'FeatureConfiguration.ps1' script (./ FeatureConfiguration.ps1)
- When it asks to authenticate, use the same Microsoft account as used to log in to the CyberGate Admin portal

```

Windows PowerShell
Execution Policy Change
The execution policy helps protect you from scripts that you do not trust. Changing the execution policy might expose
you to the security risks described in the about_Execution_Policies help topic at
https://go.microsoft.com/fwlink/?LinkID=135170. Do you want to change the execution policy?
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "N"): a

CyberTwice

Script to configure the CyberGate features

Notice!
You need either the global administrator role, or both
the user administrator role and teams administrator
role to be able to execute this script.

Checking powershell version..
- Powershell: V5 is detected ✓

Checking if required Powershell modules are installed...
- Checking module 'MicrosoftTeams' : V4.9.1 already installed ✓
- Checking module 'Microsoft.Graph.Authentication' : V1.10.0 already installed ✓
- Checking module 'Microsoft.Graph.Users' : V1.10.0 already installed ✓
- Checking module 'Microsoft.Graph.Identity.DirectoryManagement' : V1.10.0 already installed ✓
- Are all required Microsoft Graph modules the same version
    
```

After the script is executed successfully the warning symbol is gone.


Microsoft
Temp Tenant 1

ADMINISTRATION

Licensing

BASIC

Global

Device

Multi-ring

CAMERA

Meeting

TEAMS APP

Availability

Device

Device settings

Create a device entry for each SIP device you are connecting to CyberGate.
Each created device entry contains an authentication username and password to be used in the configuration of your SIP device together with 'cybergate.cybertwice.com' as the registrar address.
For detailed instructions on how to configure the SIP device click [here](#) for the brand specific manuals.

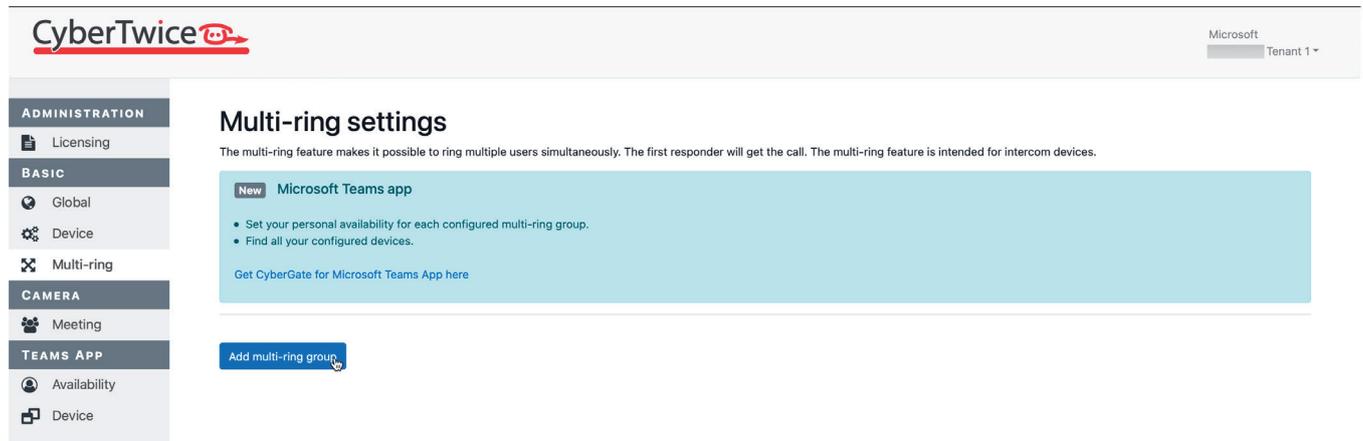
To make the display name visible in Teams, some configuration in the Teams environment is required.
This can be done automatically by executing the PowerShell script that can be downloaded with the button below.
The user to execute this script must have either the Global Administrator role or both the User Administrator role and the Teams Administrator role.
For more information see the [manual](#).

[Download](#)

[Add device](#)

Display name	Authentication username	Password	Licensed	Recorded	Teams to device	Action
Other locations						
Pager test	M9FYLIUDDOOK73TQ6ITC	GVC ●●●●●●●●	yes	no	yes	Edit Delete

Next, navigate to the Basic-Multi-ring menu.



CyberTwice Microsoft Tenant 1

ADMINISTRATION

- Licensing

BASIC

- Global
- Device
- Multi-ring**

CAMERA

- Meeting

TEAMS APP

- Availability
- Device

Multi-ring settings

The multi-ring feature makes it possible to ring multiple users simultaneously. The first responder will get the call. The multi-ring feature is intended for intercom devices.

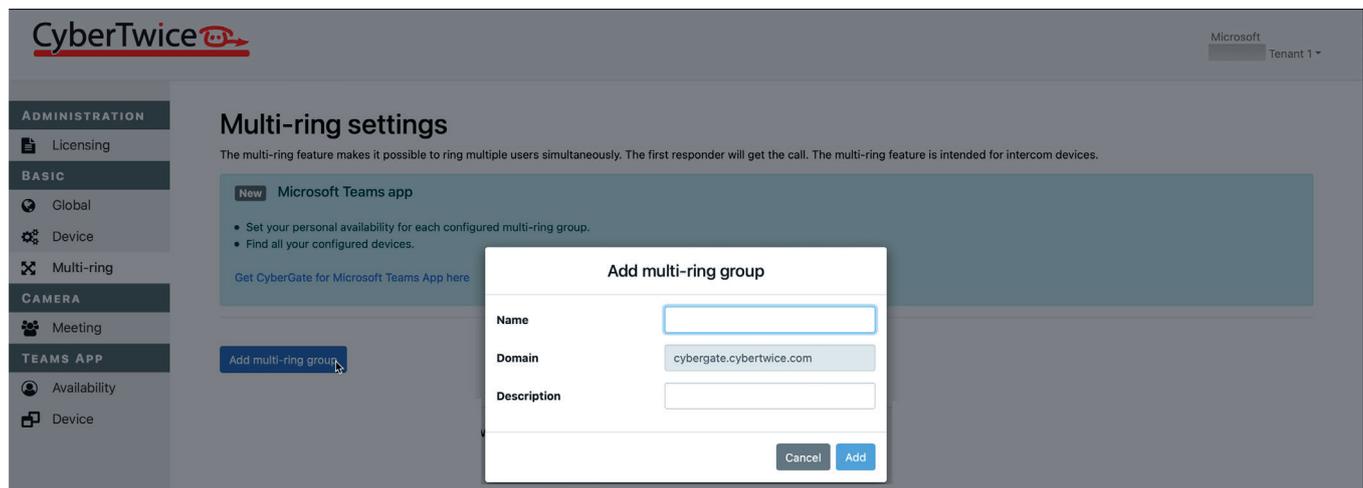
New Microsoft Teams app

- Set your personal availability for each configured multi-ring group.
- Find all your configured devices.

[Get CyberGate for Microsoft Teams App here](#)

[Add multi-ring group](#)

Click 'Add multi-ring group'



CyberTwice Microsoft Tenant 1

ADMINISTRATION

- Licensing

BASIC

- Global
- Device
- Multi-ring**

CAMERA

- Meeting

TEAMS APP

- Availability
- Device

Multi-ring settings

The multi-ring feature makes it possible to ring multiple users simultaneously. The first responder will get the call. The multi-ring feature is intended for intercom devices.

New Microsoft Teams app

- Set your personal availability for each configured multi-ring group.
- Find all your configured devices.

[Get CyberGate for Microsoft Teams App here](#)

[Add multi-ring group](#)

Add multi-ring group

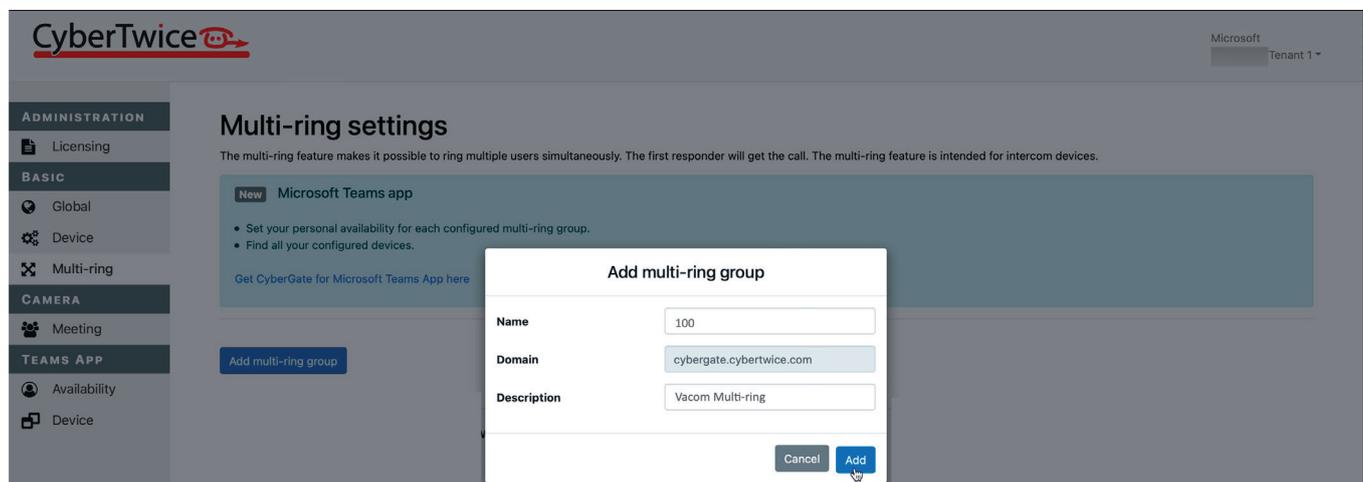
Name

Domain

Description

[Cancel](#) [Add](#)

Name the Multi-ring group '100' and add a description.
Click the blue 'Add' button to create the Multi-ring group.



CyberTwice Microsoft Tenant 1

ADMINISTRATION

- Licensing

BASIC

- Global
- Device
- Multi-ring**

CAMERA

- Meeting

TEAMS APP

- Availability
- Device

Multi-ring settings

The multi-ring feature makes it possible to ring multiple users simultaneously. The first responder will get the call. The multi-ring feature is intended for intercom devices.

New Microsoft Teams app

- Set your personal availability for each configured multi-ring group.
- Find all your configured devices.

[Get CyberGate for Microsoft Teams App here](#)

[Add multi-ring group](#)

Add multi-ring group

Name

Domain

Description

[Cancel](#) [Add](#)

The screenshot shows the CyberTwice interface with the 'Multi-ring settings' page. The left sidebar contains navigation menus for 'ADMINISTRATION', 'BASIC', 'CAMERA', and 'TEAMS APP'. The main content area has a header 'Multi-ring settings' and a sub-header 'Microsoft Teams app'. Below this, there is a blue box with instructions: 'Set your personal availability for each configured multi-ring group.' and 'Find all your configured devices.' A yellow box states 'This multi-ring group does not yet contain any participants.' At the bottom, there is an input field with '@ fritstestuser1robin.onmicro' and an 'Add' button.

The Multi-ring group is created, but does not contain Teams users to call.

Add a Teams user (only the name part, not the domain) and click 'Add'
In this example, two users were added to the Multi-ring group.

This screenshot shows the same 'Multi-ring settings' page, but now the multi-ring group contains two users. The yellow box is replaced by a table with the following data:

Teams username	Delete
koos@fritstestuser1robin.onmicrosoft.com	
frits@fritstestuser1robin.onmicrosoft.com	

Below the table, the input field now contains '@ fritstestuser1robin.onmicro' and the 'Add' button is still present.

Document History

Document Version	Date	Author	Change
1.0.0	27-02-23	KR	Initial version
1.0.1	10-05-23	KR	Text modifications