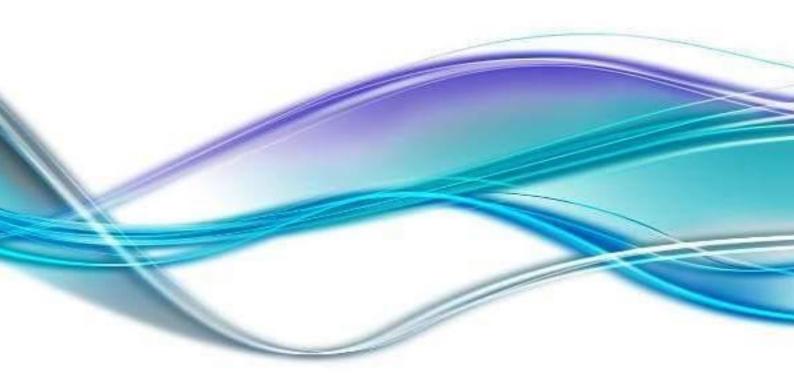
Setup Reference guide for KX-NS Series (Tested with NS700 Ver8.03) "Call2Teams" SIP Extension



Panasonic

Version 1.0 (BCBU-CNS) 24.August, 2020



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♦ Introduction:

This document is a reference for configuring "Call2Teams" integration and SIP Extension onto KX-NS Series systems and includes the settings required for Microsoft Teams.

Call2Teams is a service that bridges between your PBX service and Microsoft Teams on Office 365. The service is designed to connect to your PBX using the standard 'SIP Registration' method, the same way as a Panasonic Mobile Softphone via Media Relay Gateway (MRG).

In practice, there may be changes required to your PBX or network to create a successful connection. This document sets out the process you can run through to configure and validate your PBX connection so that Call2Teams can connect successfully.

Audience for this document

This document is provided for customers to understand and configure their PBX for access by the Call2Teams service.

It is expected the customer will be able to call upon the following resources and experience:

- · Networking and firewall configuration
- · PBX configuration and management
- · SIP device configuration (phone/softphone)
- · Microsoft Teams basic configuration (PowerShell skills are not required)

Customers often need to involve the organization or person that maintains and configures their phone system.

♦ Attention:

This document was created based on the results of test environment accounts.

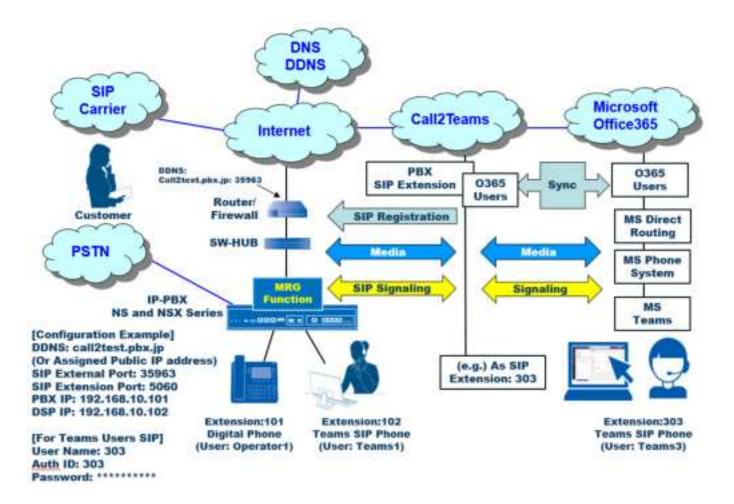
Panasonic cannot guarantee SIP Extension operation in all environments, however as a result of completing this Inter-Operability Test Panasonic will provide technical support for any issues experienced an assist as far as possible in providing a resolution.

Please obtain relevant information from **Qunifi/Calle2Teams**, and **Microsoft Teams** before configuration of Call2Teams integration and SIP Extension.

Panasonic will not be held liable for any information provided in this guidance document. Information used in this document is for interoperability testing.

Information and Specifications in this document are subject to change without notice.

♦ Network Topology:



Environment:

Calle2Teams: One-Click 2nd Gen Panasonic PBX: KX-NS700 ver:8.03

Microsoft Teams: 1.300.19565 Microsoft Office 365 E5 Trial

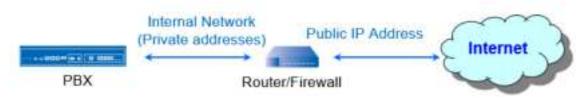
Note:

(1) Enabling Remote Access to PBX

Call2Teams connects to your phone system from the Internet. You should configure access to your phone system to connect to the PBX.

It is outside the scope of this document to go into the configuration of various firewalls and routers but here are a few guidelines for your IT admin to configure the firewall.

1.1 Connection topology



Accessed via Firewall redirection:

The PBX is on an internal network and a firewall or router is performing Network Address Translation (NAT) between the public internet address and the internal network addresses. In this case certain traffic types from the internet will be allowed through and redirected to the PBX to allow internet devices to talk to the PBX through the firewall, in the same way as a directly published PBX.

1.1.1 PBX behind firewall

PBXs behind a firewall will require specific redirections to be set-up to allow connections from internet-based devices to traverse the firewall and be presented to the PBX. Typically, there are two sets of redirections required:

SIP Signaling: The standard for this is Protocol = UDP, Port = 5060, but have to use a different port for SIP Extension via MRG at WAN port. *(e.g.) WAN SIP 35963 = Forward to PBX LAN SIP =>5060.* **MEDIA:** PBXs use Protocol = UDP, Port range = 16000-16511 (Dependent on installed DSP cards).

1.2 Firewall Rules

If you wish to restrict public access to the PBX then there are two components:

For signaling, the IP addresses and port numbers are shown in the Call2Teams portal once the PBX service has been set up. The firewall should allow traffic from any port on those IP addresses using the protocol that corresponds to the chosen transport protocol (udp for "UDP" and tcp for "TCP" or "TLS").



(2) Configuring PBX to Remote SIP Extension

2.1 Creating SIP accounts on PBX

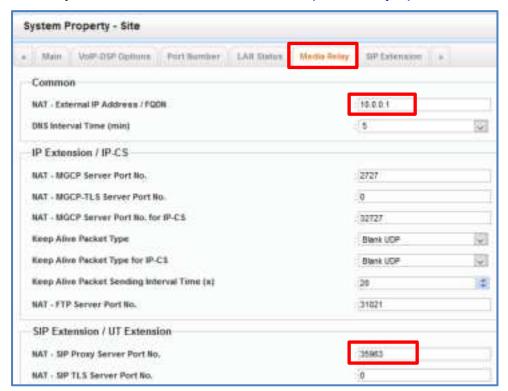
- 2.1.1 Login as "INSTALLER"
- 2.1.2 Move over [System Property] and then select [Site]



2.1.3 [Media Relay] Tab - [Common]

1. NAT - External IP Address/FQDN: 10.0.0.1 (Enter Assigned public IP address)

2. NAT - SIP Proxy server Port No: 35963 (For Example)



* When using DDNS

1. NAT - External IP Address/FQDN: call2test.pbx.jp (For Example)

2. DNS Interval Time (min): Leave at 10

3. NAT - SIP Proxy server Port No: 35963 (For Example)



Click [Apply]

No need to make the System reset.

Cancel

(2) Configuring PBX to Remote SIP Extension continued

SIP Extension – Port Property

2.1.5 Move over [V-SIPEXT32] and then select [Port Property]



2.1.6 [Main] Tab

1. Extension Number: Enter the Extension Number.

For example: (Extension Number / SIP Username) = 303

Enter: 303

2. Password: Enter the Password.

For example: password = PaSsWoRd34567890

Enter: PaSsWoRd34567890



2.1.7 [Location/P2P] Tab

1. Phone Location: Select the "Remote + Local"

2. Panasonic SIP Phone only: Select the "No"



Click [OK] to apply the changes.

(3) Call2Teams Configuration to Work with Panasonic PBX

When the PBX is enabled for remote access and it is understood how to create SIP credentials for users, the Call2teams service needs to be configured to connect to the PBX.

This requires two areas of configuration:

- A Service-level configuration to define how every user connects to the PBX
- Per-user configuration to allow each user to provide a device registration to the PBX

You can got an Invitation email after registered from Call2Teams and Click button.

Accept Invitation

3.1 Access to Call2Teams Portal: https://admin.call2teams.com/portal/

Login: o365_admin@customerdomain.onmicrosoft.com (For Example)

Password: Enter your o365 password

And Click [Sign in]



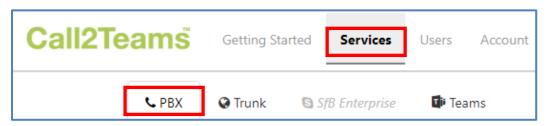
3.2 Configure the connection to your PBX

In the call2Teams portal the Services tab allows for the overall configuration between Teams and the PBX.

When selecting the PBX option, there will be a list of available PBX types or services. Select the most appropriate template for your PBX, if the PBX is not listed, select 'Custom' or 'Not listed'. This will bring up the all available options for the PBX connection. If you've selected a defined PBX template, then a subset of these fields will be available in the configuration form.

3.3 Services PBX

Go to [PBX] Tab



(3) Call2Teams Configuration to Work with Panasonic PBX continued

Select [Panasonic KX-NS and NSX Series] on Pull-down menu.

Start by selecting your PBX from the available templates:		•
Panasonic KX-NS and NSX Series	•	
My PBX is not listed		

3.4 Configure the connection to PBX (PBX SIP Extension via MRG Function)

3.4.1 How to complete the PBX configuration form

The following field descriptions will assist you in configuring the PBX settings form

3.4.1.1 Service Name: Customer PBX-1 (For Example) *Reference only

3.4.1.2 Country & State/Province: Select Japan (For Example)

Call2Teams has servers spread globally across multiple continents. Enter the location of PBX here to ensure the most appropriate service location is configured as the primary note for the PBX to connect to. This ensures best call quality. The service will configure two nodes for each PBX to ensure high availability.

3.4.1.3 SIP Domain: 192.168.10.101 (For Example)

This is usually just the PBX local IP address used to reach the PBX. Do not enter a port number on the SIP Domain

3.4.1.4 SIP Proxy: call2test.pbx.jp:35963 (For example) or Assigned public IP address: 35963

This be used to specify the IP address or public host name to reach the PBX for the PBX requires the SIP domain to be set to a different value. *Example domain is used a dynamic DNS Service domain. A port number can be specified by appending a colon and the number to the SIP Proxy field.

3.4.1.5 Authentication Type: Leave "Registration"

3.4.1.6 Calling Policy: Disable

Manage Teams Calling Policy

3.4.1.7 Teams Voicemail: Leave "Allow Voicemail"

(3) Call2Teams Configuration to Work with Panasonic PBX continued

3.4.1.8 Music On Hold: Teams Hold Music (Default)

PBX Hold Music (If needed)

3.4.1.9 Expiry (seconds): Leave "BLANK" (Default)

3.4.1.10 Protocol: Leave "UDP" (Default)

3.4.1.11 Propagate Refer: Leave "Teams handles transfers" (Default)

3.4.1.12 Suppress Contact Data Param: Leave "Yes" (Default)

If you have a single-organization PBX using a single public IP address, then you should set this to 'No' as the alternative can hinder correct function with some PBXs.

3.4.1.13 Encrypt Media: Leave "No" (Default)

3.4.1.14 Override Codecs: Leave PCMA(G.711), PCMU(G.711), G729

If specific codecs are selected here only those will be allowed in the SDP payload, other codecs will be removed. You can drag and drop the codecs shown to specify the codec preference.

3.4.1.15 Outside line prefix: Leave "BLANK"

If the PBX required a number to be dialed to reach an outside line, enter this here and it will be automatically prepended; this means Teams users do not need to specify this when dialing and can simply dial the destination PSTN number.

3.4.1.16 E164 Number Format: Select "Localized" (For Example)

Teams uses E164 numbering, which is where numbers begin with a '+' followed by the country code. If the PBX expects localized numbers, then you can specify the mapping here.

E164 Number Translation (In Japan Test example)

This trunk's country is configured as Japan which has a dialing country code of 81.

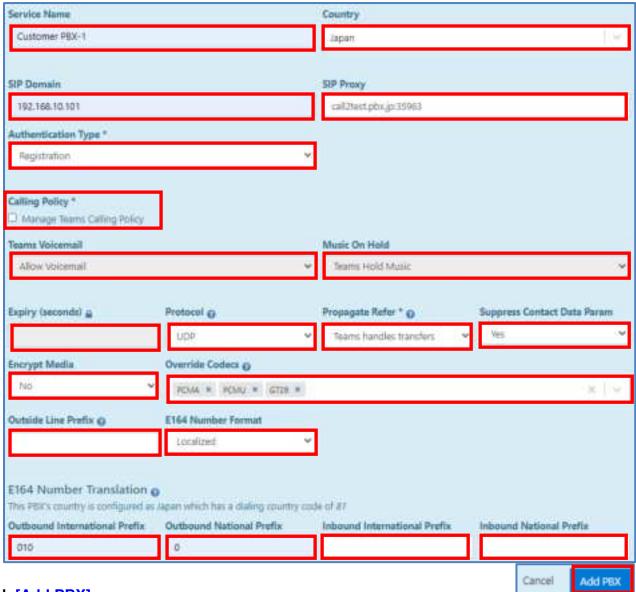
3.4.1.17 Outbound International Prefix: Enter "010" (For Example)

3.4.1.18 Outbound National Prefix: Enter "0" (For Example)

3.4.1.19 Inbound International Prefix: Leave "BLANK"

3.4.1.20 Inbound National Prefix: Leave "BLANK"

(3) Call2Teams Configuration to Work with Panasonic PBX continued



Click [Add PBX]

3.5 Additional configuration topics

3.5.1 Dialing Limitations

There are some dialing rules built into Teams that cannot be circumvented:

- · Numbers beginning with '0' are converted to full E164 numbers. If you have extension numbers beginning with '0' then consider changing them so they don't have this prefix
- · Many PBXs have feature codes beginning with '*' that can be dialed. Most will work from Teams, but *11, *12 and *13 do not. Microsoft have indicated that they reserve the right to block some other two-digit star codes as they allocate them for new native Teams features, although at the time of writing there is no sign of this.

If you make use of these blocked feature codes then you need to change the codes to ones that will not be blocked by Teams by the PBX.

3.6 Services Teams Sync Enable

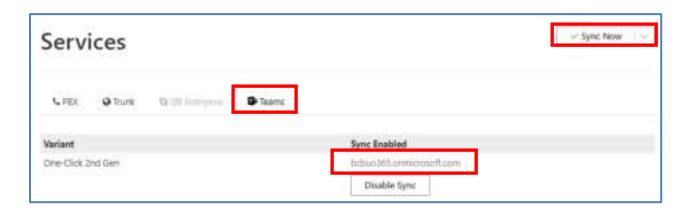
Go to [Teams] Tab

3.6.1 Check Microsoft Office 365 domain and Green check Mark of Sync Now.

3.6.1.1 Sync domain:

bcbuo365.onmicrosoft.com (For Example)

After the service has been enabled we will start syncing data between Call2teams and Microsoft Office 365.



Regarding Microsoft Office 365 management,

Please see Appendix (7) Microsoft Office 365 Admin Center "Free trial edition" (Test case in Japan).

(4) Creating Call2Teams Users (Teams and PBX SIP accounts)

The per-user settings are entered into the Call2Teams service 'Users' tab to map each Microsoft Teams user to the SIP device credentials created.

A phone number is also required, this may be a full DID number or just an extension. The number must be unique for each user. The country code for the user is driven from the User's country setting in the Office 365 license area – if it is incorrect then alter it in the Office 365 portal and then run another sync into Call2Teams.

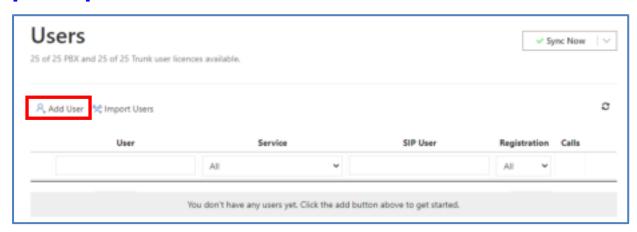
SIP Username should not include an @ symbol.

4.1 Creating Users (Teams and PBX SIP accounts) on Call2Teams

Go to [Users]



Click [Add User]



4.2 Add User

Teams

4.2.1 Select a User: Select oonishikiyoshi (For Example/Sync o365)

4.2.2 Phone Number (Japan): +81 92 4331504 (Sync o365)

Custom PBX

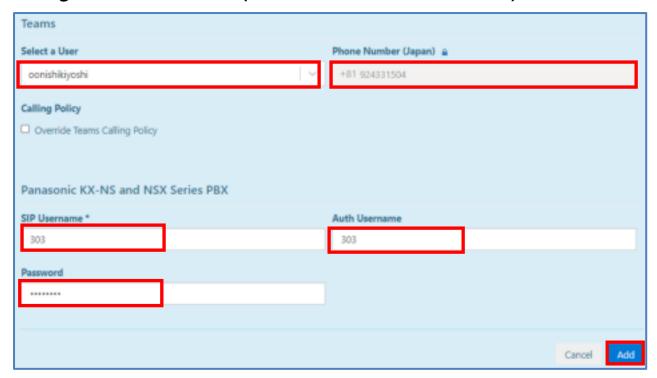
4.2.3 SIP Username: Enter 303 (For Example)

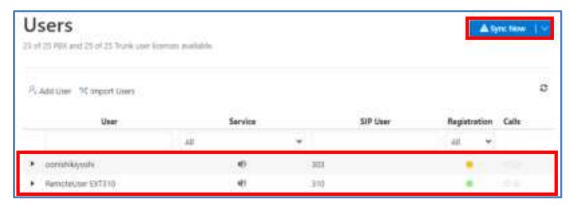
4.2.4 Auth Username: Enter 303 (For Example)

4.2.5 Password: Enter PaSsWoRd (For Example)

Click [Add]

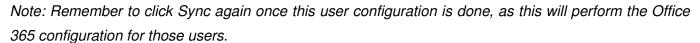
(4) Creating Call2Teams Users (Teams and PBX SIP accounts) continued





4.3 Check Users Registration

Click [Sync Now]





Syncing 5

(4) Creating Call2Teams Users (Teams and PBX SIP accounts) continued

4.4 SIP Registration indicators and error messages

SIP registration status is shown against users in the Users tab. This indicator will show green if registration is operating normally.

If the indicator is Red, the brief reason will be displayed when you hover the mouse pointer over the indicator. The message shown varies between

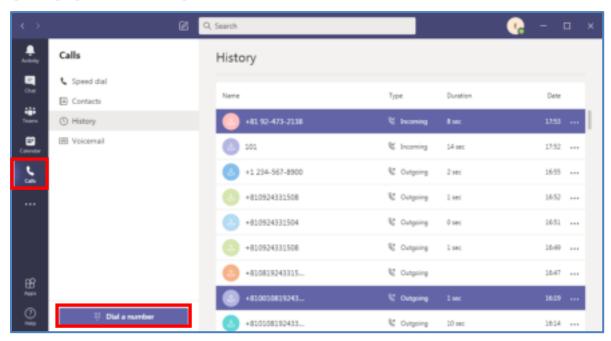


PBX vendors, and some of the more common ones are shown in the table below

Message	Advice	
Unable to resolve URI	Either the SIP Proxy (if specified) or SIP Domain is incorrect	
No response received after xx seconds	The PBX did not respond. Check the firewall and the SIP	
No response received after xx seconds	Proxy/Realm. Specify a port in the SIP Proxy if required.	
Authentication Failure		
Declined	Usually means that the SIP Username, SIP Auth Username (if	
Forbidden		
Invalid password	specified) or SIP Password are incorrect.	
Not found		
Proxy Authentication Required	It could be that the SIP Realm is incorrect if the PBX checks this.	
Unauthorized		
User unknown		

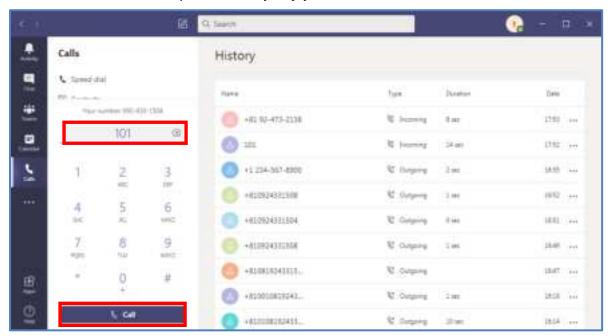
(5) How to use the Call2Teams with PBX

5.1 Teams with Call2Teams outgoing calls to PBX Extension and national line Click [Calls] - [Dial a Number]



Extension Call: Press [PBX Extension Number] and Click [Call]

Also it's able to make call with press ten keys by your PC.



National call: Press [0 + National Number] and Click [Call]

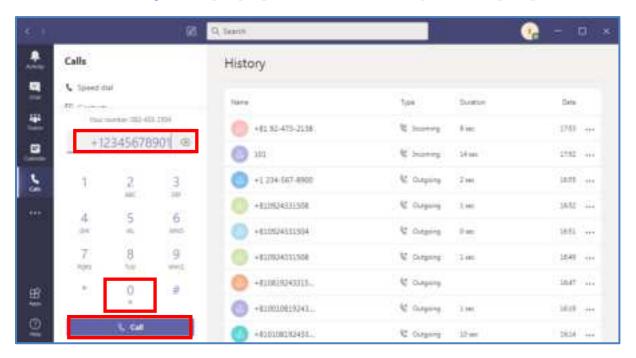
*Note: The 0 of top: PBX CO line access Number.



(5) How to use the Call2Teams with PBX continued

5.2 Teams with Call2Teams to international calls (+sign)

International call: Long Press [0/+] + [International Number] and Click [Call]



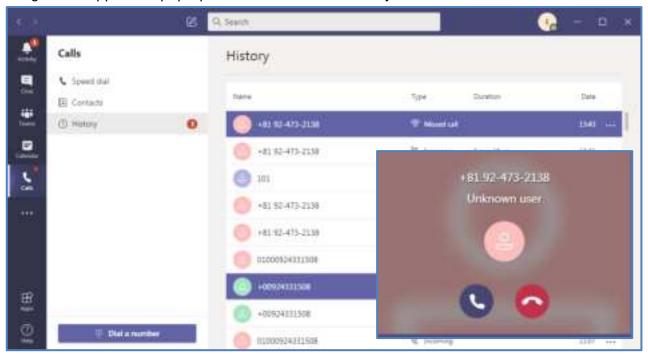


Disconnect: Click a Hung-up

button.

5.3 Teams with Call2Teams Incoming calls from PBX

Incoming call: It appears a pop-up window with Caller ID on your Teams.



Disconnect: Click a Hung-up button.

(6) Configure additional PBX option / Trouble Shooting

(1) Disconnection issue

Reason behind: status un-match because of 183(SDP) reply for outgoing call.

Countermeasure: Enable System Option 10-7 (Need to login as Sales Company Mode)

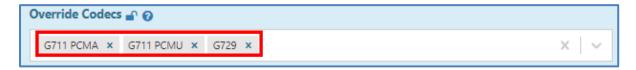
(2) Become a call back state when talking

Reason behind:

Issue related between an "Override Codecs on Call2Teams" and PBX support codecs.

Countermeasure: Choose supported codec for PBX on Call2Teams.

Override Codecs: PCMA (G.711), PCMU (G.711) and G.729



Issue outline / Scenario (Override Codecs: Default, Leave blank)

- (1) Making Call from Teams to PBX extension or CO line calls.
- (2) It appear a pop-up window like call back on your Teams.

Never press an "Accept with Audio" button because it make an issue that is no voice for about 30 minutes, also RTP voice packets continue sending to PBX (DSP) then unable to use normally.

- (3) Press "Decline Call" 5 button
- (4) Disconnect call by called party phone, not Teams operation because CO call may not be able to disconnect.

Note: That issue is not happening when incoming calls at Teams.



Don't use the Hang-up when making call by Teams.

Disconnect by called party first, then Hang-up by Teams.

To avoid that issue, need to choose the Codecs same as

PBX supported codecs on Call2Teams portal site.

Appendix

(7) Microsoft Office 365 Admin Center "Free trial edition".

Preparation:

(1) Prepare an active personal email address.

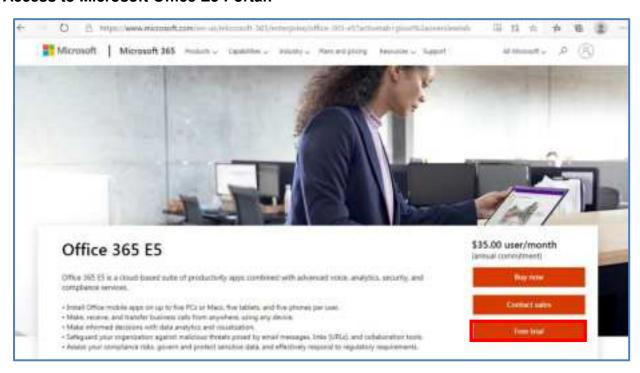
For Example: panasonic.test001@gmail.com

- (2) Microsoft Office 365 E5 "Free trial" (Initial valid Microsoft Phone system).
- (3) Consider the office 365 domain for test

For Example: "bcbuo365".onmicrosoft.com (Specify "domain" even doing test)

7.1 Create a Microsoft office 365 E5 trial environment for Call2Teams Test.

7.1.1 Access to Microsoft Office E5 Portal:



7.1.1 Go to Free trial

Click [Free trial]

7.1.2 How to Setup

The following field descriptions will assist you in configuring the Office 365 settings form

7.1.2.1 Personal email address

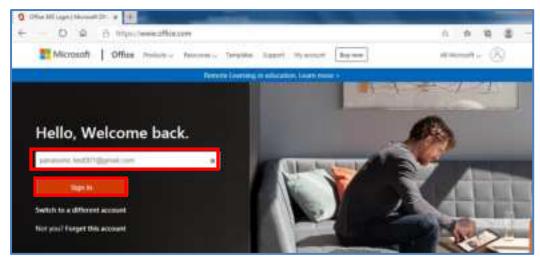
7.1.2.2 Register User Information

7.1.2.3 Create Admin User

And Make domain for test. (For example, bcbuo365.onmicrosoft.com)

7.1.3 Sign in to Microsoft Office 365

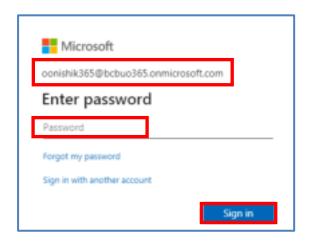
Enter an email address using personal email address as admin



And Sign in as Microsoft Office 365 Admin user

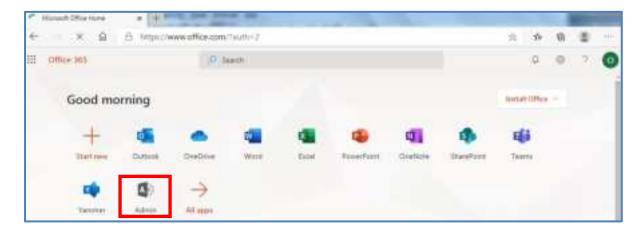
Enter [Microsoft Office 365 admin user] and [password]

*Need to register an initial Admin user.

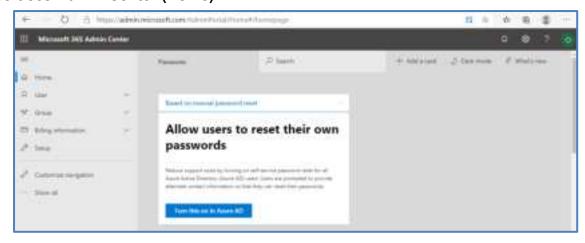


7.1.4 Microsoft Office Home

Click [Admin]



7.2 Microsoft 365 Admin Center (Home)

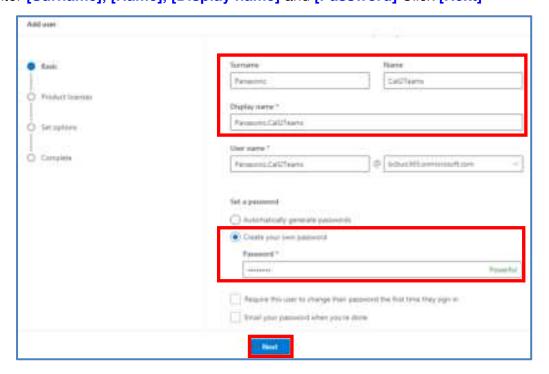


7.2.1 Add User

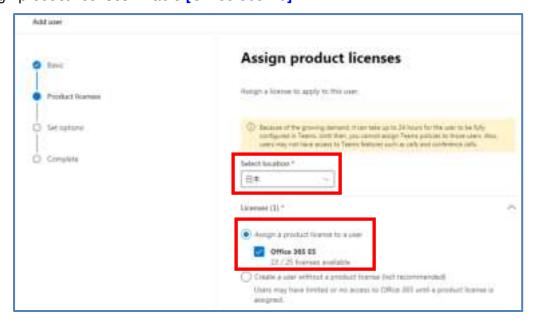
7.2.1.1 Click [User] - [Add users] for Teams User



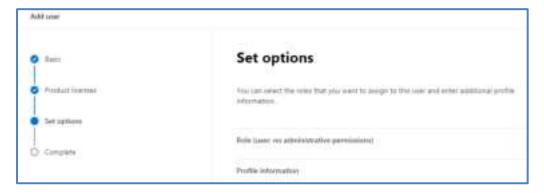
7.2.1.2 Enter [Surname], [Name], [Display name] and [Password] Click [Next]



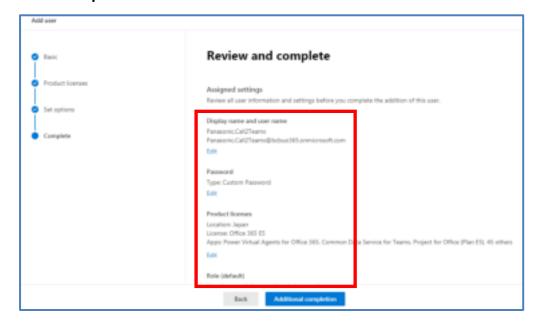
7.2.1.3 Assign product licenses Enable [Office 365 E5]



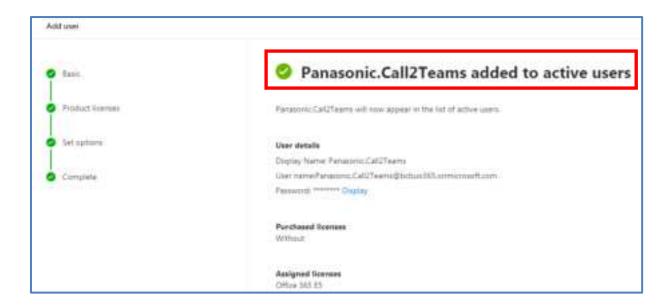
7.2.1.4 Set options



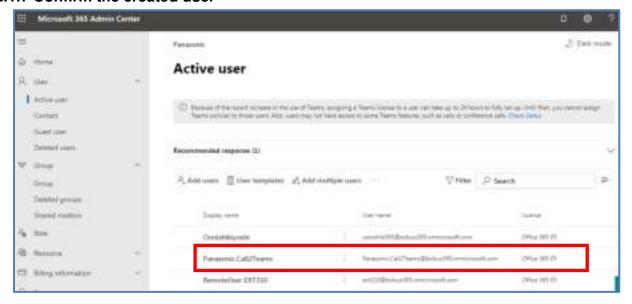
7.2.1.5 Review and complete



7.2.1.6 Review



7.2.1.7 Confirm the created user



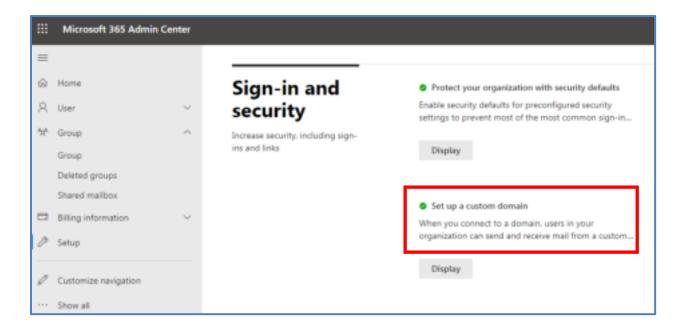
For Example,

Active User

Display Name	User Name	License
Oonishikiyoshi	Oonishik365@bcbuo365.onmicrosoft.com	Office
(Admin User) Sync: EXT303		365 E5
Panasonic.Call2Teams	Panasonic.Call2Teams@bcbuo365.onmicrosoft.com	Office
(General User) Sync: EXT310		365 E5

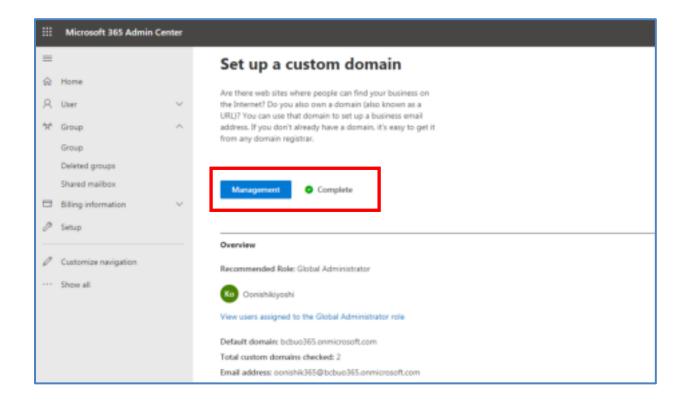
7.3 Confirm Custom domain

7.3.1 Click [Setup a custom domain]

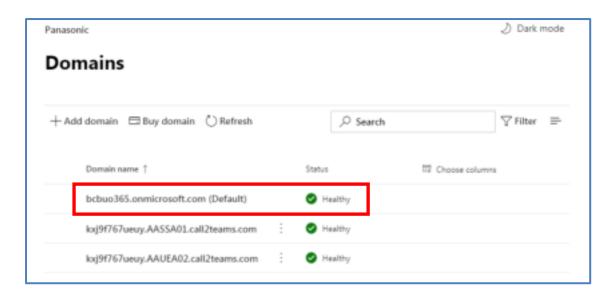


7.3.2 Confirm Default domain and Click [Management]

Click [Management]



7.3.3 Confirm Domain Name (Default) and Status



7.3.4 Confirm Domain Name (Default) and Status

