NFON Integration for Microsoft Teams

Premium integration configuration guide

NFON Integration for Microsoft Teams

Premium integration configuration guide

Configuration overview for NFON Premium Integration

The configuration required for the NFON Premium Integration for Microsoft Teams is relatively simple and straightforward.

As the integration is done between a Microsoft Teams user and a Cloudya phone extension, and since all calls made by the user will go through the Cloudya telephone system, the permissions to call certain destinations are controlled by the permissions set on the user phone extension. Because of this, you can use a minimalistic configuration for Microsoft Direct Routing consisting of:

- One simple Online PSTN Usage container
- One simple "catch-all" Online Voice Route, which will send all calls to the NFON SBC and Cloudya phone system
- One standard Online Voice Routing Policy, as users calling permissions will be managed by the Cloudya phone system

Before getting started

Before starting the call routing configuration on the Microsoft Phone System (i.e. Direct Routing), you should:

1. have added the additional domain that is required for the connection into the NFON multi-tenant Session Border Controller (SBC);
2. be familiar with PowerShell and have installed the PowerShell module for Microsoft Teams.

Ensuring that the SBC has been activated

Before starting to configure Direct Routing in your Microsoft 365 tenant, you should ensure that NFON has activated the SBC. To do so, log in to the NFON Service Portal and check for the presence of the SBC information in the customer profile: `Administration` > `Profile`.

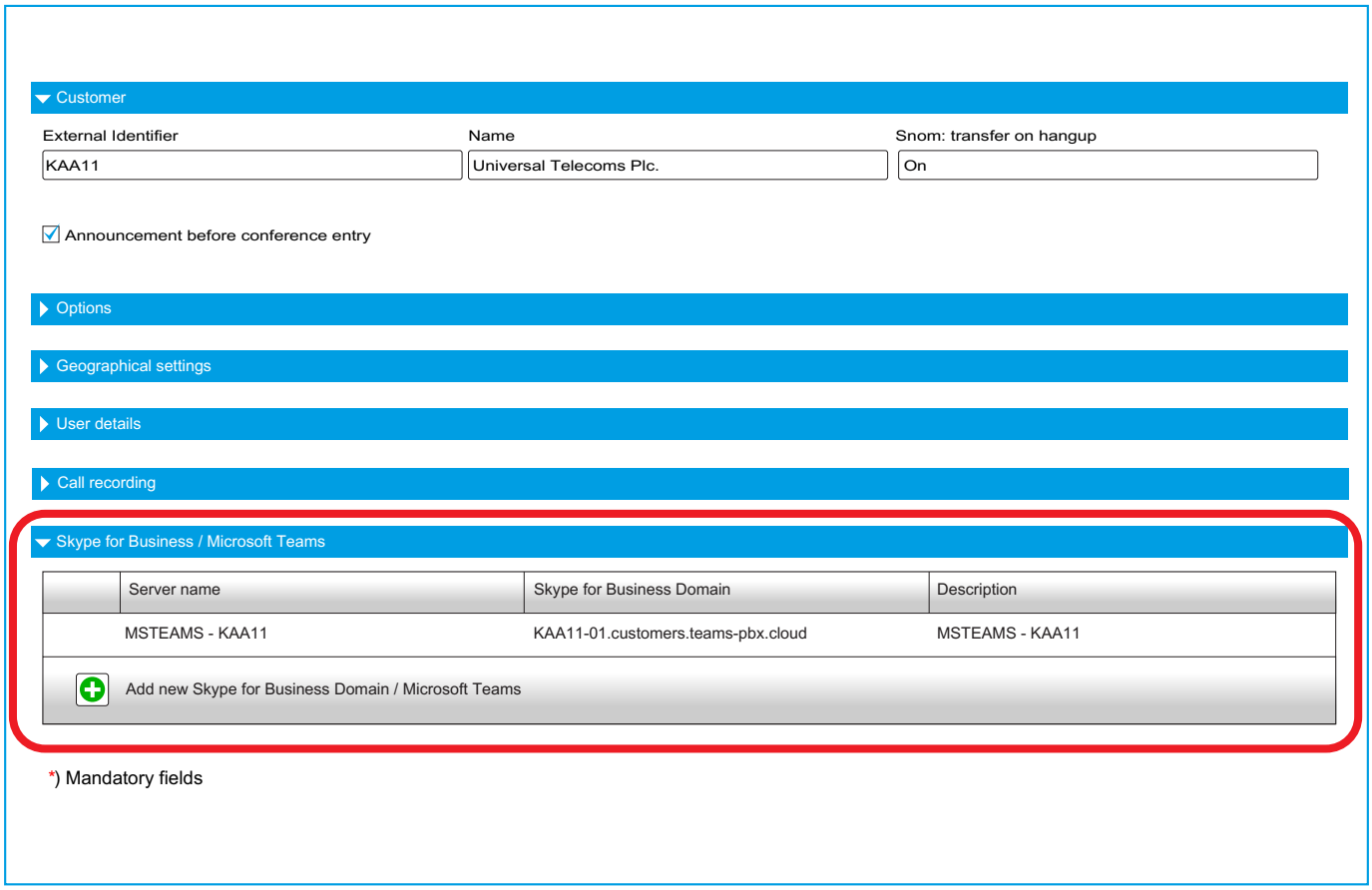
The SBC should be listed in the **Skype for Business/Microsoft Teams** section of the profile, as shown in the picture. If the section is missing or the SBC is not listed, then the SBC has not been activated by NFON yet. Please check that you have notified NFON as required in the "Provisioning: Completing the Verification Process" article.

TIP

Some elements of the configuration within Microsoft 365 services can be subject to delays as information propagates between different parts of the Microsoft platform. This can vary from day to day, so we recommend that you aim to carry out the steps at least 48 hours prior to your go-live date to allow for this. If you receive an unexpected error at any step, we suggest waiting 24 hours and trying again before reporting a problem.

NFON Integration for Microsoft Teams

Premium integration configuration guide



Information you will require

You will need to collect the following information before starting the configuration of the Microsoft Phone System:

Information	Shown in documentation as	Example
Cloudya PBX K account	Kxxxx	KAA11
PSTN gateway SBC FQDN	Kxxxx-nn.customers.teams-pbx.cloud	KAA11-01.customers.teams-pbx.cloud
Customer default domain for the Office 365 tenant	domain	universal-telecoms.co.uk
End user UPN	user@domain	katrin.herman@universal-telecoms.co.uk
End user DDI	E.164 number	+441632960201
End user extension number		201

NFON Integration for Microsoft Teams

Premium integration configuration guide

TIP

The information listed here will be required during different steps of the configuration process.

When following this guide, please replace *Kxxxx* with the customer K account that is to have the integration configured.

Direct Routing configuration steps for the premium integration

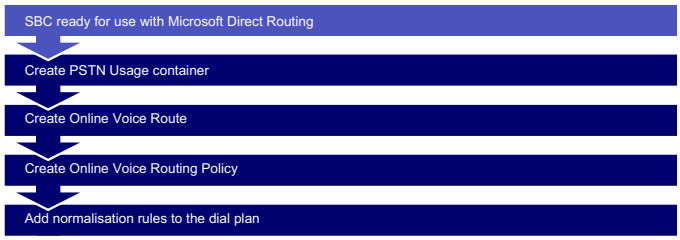
Tasks to complete to ensure success

Prior to starting the configuration

Step		Description
	☐	Add the SBC FQDN as an additional domain into Microsoft 365 (See "Provisioning section")

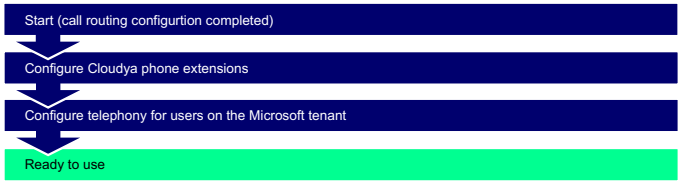
Configuring call routing (one-off steps)

Step		Description
1		Create a single PSTN Usage container
2		Create a single Online Voice Route
3		Create a single Voice Routing Policy
4		Add normalisation rules to the Microsoft Phone System Dial Plan



Configuring users/phone extensions

Step		Description
5		Enable the integration for a Cloudya phone extension
6		Enable Direct Routing for Microsoft 365 user



Next step

- Start configuring call routing in the Microsoft Phone System by adding a new PSTN Usage container

Next: Creating a single PSTN Usage container

See also

- Configuring Direct Routing on Microsoft Docs

! IMPORTANT

If you have already looked at the Microsoft documentation related to the configuration of Direct Routing, note that you should skip the **Connect your SBC** section, as you are connecting into a multi-tenant SBC which is being centrally managed by NFON.

NFON Integration for Microsoft Teams

Premium integration configuration guide

Creating a single PSTN Usage container

First, you will need to add a new Online PSTN Usage to your Microsoft 365 tenant. The purpose of an Online PSTN Usage is to link an Online Voice Routing Policy to an Online Voice Route. This article will take you through the steps required to achieve this task.

Applies to	
NFON Premium Integration for Microsoft Teams	☐
NFON Standard Integration for Microsoft Teams	☐

Call Routing Configuration Tasks

Configuring call routing (one-off steps)

These are the steps to follow (in the right order) to configure the call routing components of the Microsoft Phone System for the NFON Premium Integration for Microsoft Teams:

Step		Description
1	▶	Create a single PSTN Usage container
2		Create a single Online Voice Route
3		Create a single Voice Routing Policy
4		Add normalisation rules to the Microsoft Phone System Dial Plan

TIP

- Your NFON SBC should be activated prior to starting the configuration of the voice routing components (see Provisioning);
- If you have multiple NFON Cloudya tenants (**K accounts)**,then you will need to repeat the steps listed below for each SBC FQDN account.
- All actions below are in the customer Office/Microsoft 365 tenant.

Adding a new online PSTN Usage to the global policy

As explained above, an Online PSTN Usage links an Online Voice Routing Policy to an Online Voice Route.

Since all calls made by a user will go through the Cloudya telephone system, and since the permissions to call certain destinations are controlled by the permissions set on the user phone extension, a single global Online PSTN Usage will suffice. Here we will add a new Online PSTN Usage to the Global configuration:

POWERSHELL

```
Set-CsOnlinePstnUsage -Identity "Global" -Usage @{Add="NFON-PBX-Kxxxx"}
```

TIP

Be patient: It might take a few minutes for the new Online PSTN Usage to synchronise in Microsoft back end.

Example

Here is an example of the command used above:


```
> Set-CsOnlinePstnUsage -Identity "Global" -Usage @{Add="NFON-PBX-KAA11"}
```

Verifying the configuration of the online PSTN Usage you have just added

You can check the configuration you have made in the step above by running the following PowerShell command:

POWERSHELL

```
Get-CsOnlinePstnUsage -Identity "Global"
```

Example

```
> Get-CsOnlinePstnUsage -Identity "Global"


Identity : Global
Usage    : {NFON-PBX-KAA11}
```

Next

- Once you have added the new Online PSTN usage container to the global rule, you will need to wait for the configuration to propagate into the Microsoft Phone System before proceeding to the next step.

Next: Creating a Single Online Voice Route

Creating a single Online Voice Route

Now that you have added an Online PSTN Usage to the global rule, you will need to create a new Voice Route in your Microsoft Office 365 tenant. The purpose of a Voice Route is to associate a number pattern (the phone number being dialled) with the online PSTN gateways that should be used to carry the call to that destination. This article will take you through the steps required to achieve this task.

Applies to	
NFON Premium Integration for Microsoft Teams	□
NFON Standard Integration for Microsoft Teams	□

Call Routing Configuration Tasks

Configuring call routing (one-off steps)

These are the steps to follow (in the right order) to configure the call routing components of the Microsoft Phone System for the NFON Premium Integration for Microsoft Teams:

Step		Description
1	□	Create a single PSTN Usage container
2	▶	Create a single Online Voice Route
3		Create a single Voice Routing Policy
4		Add normalisation rules to the Microsoft Phone System Dial Plan

TIP

- You will need to have created a PSTN Usage container before proceeding with adding a new Online Voice Route;
- If you have multiple NFON Cloudya tenants (**K accounts**), you will need to repeat the steps listed below for each SBC FQDN account.
- All actions below are in the customer Office/Microsoft 365 tenant.

Adding a new online Voice Route to the Microsoft Phone System

Here again, because all calls will go through the Cloudya telephone system, one voice route will suffice:

POWERSHELL

```
New-CsOnlineVoiceRoute -Identity "Catchall-to-NFON-Kxxxx" -NumberPattern ".*" -OnlinePstnGatewayList Kxxxx-nn.customers.teams-pbx.cloud -Priority 1 -OnlinePstnUsages "NFON-PBX-Kxxxx"
```


In the command above:

- The `NumberPattern` setting `".*"` ensures that all calls to any phone number of any length will be routed to the Cloudya telephone system. This includes E.164 number, star codes or extension numbers.
- The `OnlinePstnGatewayList` setting points to the NFON Session Border Controller High-Availability Cluster. *Note that there is no need to create an `OnlinePSTNGateway` (as shown in the Microsoft Documentation for configuring Direct Routing), as this gateway is centrally managed by NFON.*
- The `Priority` is set to 1 (highest).
- The route is linked to the `OnlinePstnUsage` "*NFON-PBX-Kxxxx*".

TIP

Some elements of the configuration within Microsoft 365 services can be subject to delays as information propagates between different parts of the Microsoft platform. This can vary from day to day, so we recommend that you aim to carry out the steps at least 48 hours prior to your go-live date to allow for this. If you receive an unexpected error at any step, we suggest waiting 24 hours and trying again before reporting a problem.

Example

```
> New-CsOnlineVoiceRoute -Identity "Catchall-to-NFON-KAA11" -NumberPattern ".*" -OnlinePstnGatewayList KAA11-
01.customers.teams-pbx.cloud -Priority 1 -OnlinePstnUsages "NFON-PBX-KAA11"
```

Verifying the configuration of the online Voice Route you have just created

You can check the configuration you have made in the step above by running the following PowerShell command:

POWERSHELL

```
Get-CsOnlineVoiceRoute -Identity "Catchall-to-NFON-Kxxxx"
```

Example

```
> Get-CsOnlineVoiceRoute -Identity "Catchall-to-NFON-KAA11"


Identity                : Catchall-to-NFON-KAA11
Priority                : 1
Description             :
NumberPattern           : .*
OnlinePstnUsages        : {NFON-PBX-KAA11}
OnlinePstnGatewayList   : {KAA11-01.customers.teams-pbx.cloud}
BridgeSourcePhoneNumber :
Name                    : Catchall-to-NFON-KAA11
```

Next

- Now that you have added the required Online Voice Route, you can proceed with creating a new Voice Routing Policy

Next: Creating a single Voice Routing Policy

Create a single Voice Routing Policy

Now that you have added an Online PSTN Usage to the global rule and a Voice Route, it is time to link the two using a Routing Policy. The purpose of a Voice Routing Policy is to serve as a container for PSTN Usage that can then be assigned to users. Assigning your Teams users an online voice routing policy enables those users to receive and to place phone calls to the PSTN by using the NFON SBC. This article will take you through the steps required to achieve this task.

Applies to	
NFON Premium Integration for Microsoft Teams	☐
NFON Standard Integration for Microsoft Teams	☐

Call Routing Configuration Tasks

Configuring call routing (one-off steps)

These are the steps to follow (in the right order) to configure the call routing components of the Microsoft Phone System for the NFON Premium Integration for Microsoft Teams:

Step		Description
1	☐	Create a single PSTN Usage container
2	☐	Create a single Online Voice Route
3	▶	Create a single Voice Routing Policy
4		Add normalisation rules to the Microsoft Phone System Dial Plan

TIP

- You will need to have configured the Online Voice Route before proceeding with adding a new Voice Routing Policy;
- If you have multiple NFON Cloudya tenants (**K Accounts**), you will need to repeat the steps listed below for each SBC FQDN account.
- All actions below are in the customer Office/Microsoft 365 tenant.

Adding a new Voice Routing Policy

As with the first two steps, only one Voice Routing Policy is needed to route calls to the NFON Session Border Controller (SBC) and then the Cloudya telephone system:

POWERSHELL

```
New-CsOnlineVoiceRoutingPolicy -Identity "Via-NFON-Kxxxx" -OnlinePstnUsages "NFON-PBX-Kxxxx"
```

In the command above, we have:

- created a new Routing Policy with the `Identity` "*Via-NFON-Kxxxx*"
- linked this new routing policy to the `Online PSTN Usage` called "*NFON-PBX-Kxxxx*"

This will allow us later on to assign, or grant, this routing policy to a user. When doing so, the user will have access to the Online Voice Route(s) that are related to this Online PSTN Usage.

Example

```
> New-CsOnlineVoiceRoutingPolicy -Identity "Via-NFON-KAA11" -OnlinePstnUsages "NFON-PBX-KAA11"
```

Verifying the configuration of the Routing Policy you have just created

You can check the configuration you have made in the step above by running the following PowerShell command:

POWERSHELL

```
Get-CsOnlineVoiceRoutingPolicy -Identity "Via-NFON-Kxxxx"
```

Example

```
> Get-CsOnlineVoiceRoutingPolicy -Identity "Via-NFON-KAA11"


Identity         : Tag:Via-NFON-KAA11
OnlinePstnUsages : {NFON-PBX-KAA11}
Description      :
RouteType        : BYOT
```

Next

- Now that you have added a Voice Routing Policy, you can proceed with configuring the tenant dial plan

Next: Adding normalisation rules to the Microsoft Phone System Dial Plan

Adding normalisation rules to the Microsoft Phone System dial plan

In this last step, before you can start configuring your Teams users to use Microsoft Direct Routing, you will need to make some adjustments to the Microsoft Phone System tenant dial plan. This is achieved by adding some additional normalisation rules to the dial plan. The purpose of normalisation rules is usually to convert a telephone number as it was dialled by the user into the E.164 format, or to prevent the Microsoft Phone system to do so. This article will take you through the steps required to achieve this task.

Applies to	
NFON Premium Integration for Microsoft Teams	☐
NFON Standard Integration for Microsoft Teams	☐

Call routing configuration tasks

Configuring call routing (one-off steps)

These are the steps to follow (in the right order) to configure the call routing components of the Microsoft Phone System for the NFON Premium Integration for Microsoft Teams:

Step		Description
1	☐	Create a single PSTN Usage container
2	☐	Create a single Online Voice Route
3	☐	Create a single Voice Routing Policy
4	▶	Add normalisation rules to the Microsoft Phone System Dial Plan

TIP

- **You only need to add these normalisation rules once**, even if you have multiple NFON Cloudya tenants (**K accounts**), as it applies to all users.
- All actions below are in the customer Office/Microsoft 365 tenant.

Adding the required normalisation rules to the tenant dial plan

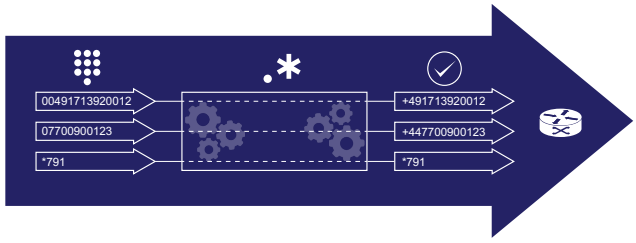
The Microsoft Phone System already has normalisation rules in place.

These are stored in the "default" (or global) tenant dial plan. However, in order for you to enable your users to dial other extension numbers on the Cloudya telephone system, or to use features that require them to dial a "star code" (e.g. `*791`), you will need to add some additional normalisation rules, so the Microsoft Phone System doesn't convert such numbers to the E.164 format.

By following this configuration step, you will be adding **extra** normalisation rules to the tenant Global/Default dial plan. This will leverage the existing automated normalisation rules already present in the Microsoft Phone System to translate local, national and international numbers into the correct E.164 format.

In this particular instance, we will add rules to prevent the normalisation of certain numbers to E.164.

The configuration of the normalisation rules uses RegEx to find patterns and "translate" them into the format required by the SBC.



TIP

- If you don't wish to do so, you can create a new dial plan. However, additional normalisation rules will be required if you decide to do so!

POWERSHELL

```
## Set New Normalisation Rules in Memory (to be used later)

$Rule1 = New-CsVoiceNormalizationRule `
   -Identity "Global/NFON Prefix-1-9" `
   -Description "Prefix-1-9" `
   -Pattern '^([1-9]\d+)$' -Translation '$1' `
   -InMemory

$Rule2 = New-CsVoiceNormalizationRule `
   -Identity "Global/NFON Prefix-Star" `
   -Description "Prefix-Star" `
   -Pattern '^(\*\d+(\d|\*|\#)*)$' -Translation '$1' `
   -InMemory

$Rule3 = New-CsVoiceNormalizationRule `
   -Identity "Global/NFON Prefix-DoubleStar" `
   -Description "Prefix-DoubleStar" `
   -Pattern '^(\*\*\d+)$' -Translation '$1' `
   -InMemory

$Rule4 = New-CsVoiceNormalizationRule `
   -Identity "Global/NFON Prefix-Hash" `
   -Description "Prefix-Hash" `
   -Pattern '^(\#\d+)$' -Translation '$1' `
   -InMemory


## Use the Normalisation Rules defined above and add these to the Global Tenant Dial Plan

Set-CsTenantDialPlan  `
   -Identity "Global" `
   -NormalizationRules $rule1,$rule2,$rule3,$rule4
```

Checking the normalisation rules in the tenant dial plan

You can check the configuration you have made in the step above by running the following PowerShell command:

POWERSHELL

```
(Get-CsTenantDialPlan -Identity "Global").NormalizationRules
```

Example


```
> (Get-CsTenantDialPlan -Identity "Global").NormalizationRules


Description         : Prefix-1-9
Pattern             : ^([1-9]\d+)$
Translation         : $1
Name                : NFON Prefix-1-9
IsInternalExtension : False

Description         : Prefix-Star
Pattern             : ^(\*\d+(\d|\*|\#)*)$
Translation         : $1
Name                : NFON Prefix-Star
IsInternalExtension : False

Description         : Prefix-DoubleStar
Pattern             : ^(\*\*\d+)$
Translation         : $1
Name                : NFON Prefix-DoubleStar
IsInternalExtension : False

Description         : Prefix-Hash
Pattern             : ^(\#\d+)$
Translation         : $1
Name                : NFON Prefix-Hash
IsInternalExtension : False
```

Next

- Now that you have configured all of the Voice Routing components in the Microsoft Phone System, you can start configuring Teams users to use Direct Routing.

Next: Enabling the Integration for a Cloudya Phone Extension

See also

- RegEx Pal https://www.regexpal.com/

Enabling the integration for a Cloudya phone extension

Now that you have configured the call routing components of the Microsoft Phone System to integrate with Cloudya, you can start enabling the integration onto your users' Cloudya phone extensions, so they can make and receive call to and from the PSTN. This article will take you through the steps required to achieve this task.

Applies to	
NFON Premium Integration for Microsoft Teams	☐
NFON Standard Integration for Microsoft Teams	☐

User/phone extension configuration tasks

Prior to starting the configuration

Step		Description
	☐	Add the SBC FQDN as an additional domain into Microsoft 365 (See "Provisioning section")
	☐	Configure Direct Routing call routing (one-off steps)

NOTE

- You should have configured all of the required Call Routing components of the Microsoft Phone that are described in the Configuring Direct Routing call routing;

Configuring users/phone extensions

These are the steps to follow (in the right order) to enable the integration between a Microsoft 365 user and their Cloudya phone extension:

Step		Description
5	▶	Enable the integration for a Cloudya phone extension
6		Enable Direct Routing for Microsoft 365 user

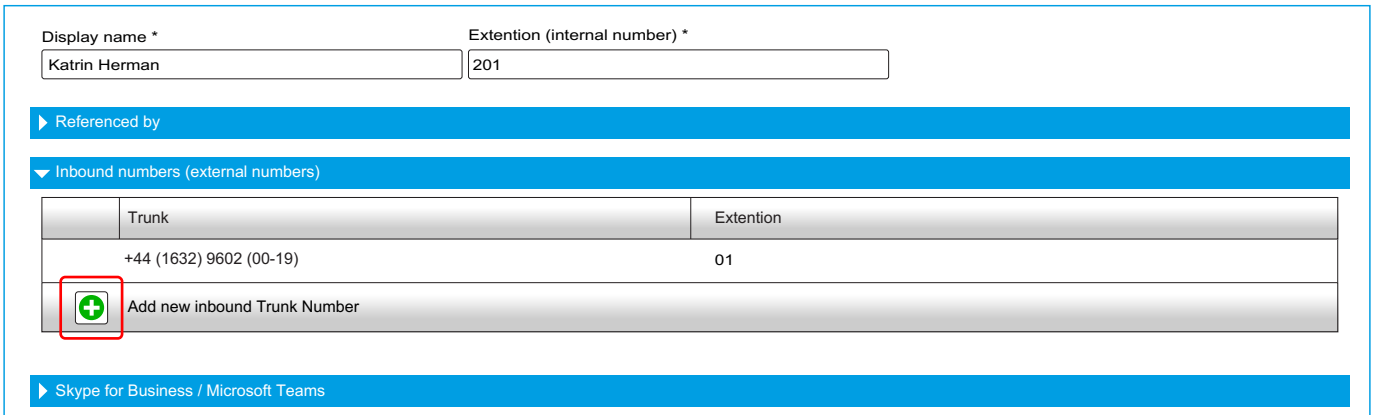
TIP

- All actions below are done from the NFON Service Portal;
- You will need to repeat this process for each Cloudya phone extension on which the integration needs to be enabled.

Add an inbound number to the cloudya phone extension

In this section, add the required direct inbound dial number to the Cloudya phone extension.

> **NOTE**
>
> A unique inbound number is required for each phone extension on which the integration is enabled.

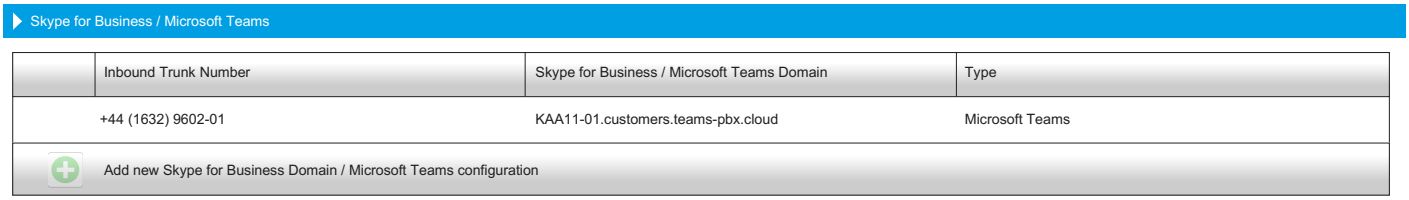


Configuring the integration

To configure the integration for this phone extension, click `Add new Skype for Business Domain / Microsoft Teams configuration`.

The integration requires three settings to be configured on each phone extension:

Inbound Trunk Number	Using the drop-down box, select one of the inbound numbers associated with the phone extension. *Please note this number, as it will be required when configuring the user account in the Microsoft Phone System.*
Skype for Business / Microsoft Teams Domain	Using the drop-down box, select the required SBC FQDN from the list (for example `KAA11-01.customers.teams-pbx.cloud`).
Type	Using the drop-down box, select `Microsoft Teams`



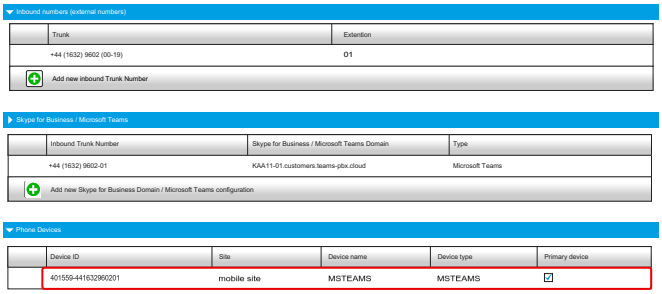
Checking the pseudo-device has been created

Unlike desk phones, you do not need to add or remove the `MSTEAMS` pseudo-device manually. Once you have completed the steps above, click `save`, and the `MSTEAMS` pseudo-device will be automatically added to the phone extension.

If you go back to the phone extension settings under **Phone devices**, you will now see the `MSTEAMS` pseudo-device for that phone extension.

Configuration example

The screenshot below shows a Cloudya phone extension on which the integration has been correctly configured and for which the `MSTEAMS` pseudo-device is present:



Next

- Now that you have enabled the integration for a user phone extension, you can proceed with configuring their user account in the Microsoft Phone system.

Next: Enabling Direct Routing for Microsoft 365 user

Enabling Direct Routing for a Microsoft 365 user

Now that you have configured the Voice Routing components of the Microsoft Phone System to integrate with Cloudya, you can start enabling users to use Direct Routing, so they can make and receive call to and from the PSTN. This article will take you through the steps required to achieve this task.

Applies to	
NFON Premium Integration for Microsoft Teams	□
NFON Standard Integration for Microsoft Teams	□

User/Phone extension configuration tasks

Configuring users/phone extensions

These are the steps to follow (in the right order) to enable the integration between a Microsoft 365 user and their Cloudya phone extension:

Step		Description
5	□	Enable the integration for a Cloudya phone extension
6	▶	Enable Direct Routing for Microsoft 365 user

TIP

- You should have configured all the required Call Routing components of the Microsoft Phone that are described in the Configuring Direct Routing call routing; You should also have configured the Cloudya phone extension for the user who requires the integration;
- All actions below are in the customer Office/Microsoft 365 tenant;
- You will need to repeat this process for each user that requires Direct Routing via the NFON SBC and the Cloudya telephone system.

Assigning licences and enabling users for Teams Phone

When creating aDIDtional Teams users or editing existing Teams users via the Microsoft Admin Center, you will need to make sure that the necessary licences for the Microsoft Phone System are assigned.

TIP

NFON is not responsible for the Microsoft licensing.

- Make sure to enable the user(s) for Enterprise or Business Voice.
- Make sure the **Phone System** app has been enabled in the admin center.

Ensuring that the user is homed online

Once you have checked that the user you are about to configure has all of the required licences, and that the **Phone System** app has been enabled on their account, you must check that the user is homed online, as Direct Routing requires it. You can check by looking at the `RegistrarPool` parameter, which needs to have a value in the infra.lync.com domain.

POWERSHELL

```
Get-CsOnlineUser -Identity "<user@domain>" | select UserPrincipalName, DisplayName, RegistrarPool,
OnlineVoiceRoutingPolicy, LineURI, EnterpriseVoiceEnabled, PhoneNumber, PhoneNumberType
```

The command above should return a value for the `RegistrarPool` containing a SIP pool FQDN on **infra.lync.com**:

Example

```
> Get-CsOnlineUser -Identity katrin.herman@universal-
telecoms.co.uk | select UserPrincipalName, DisplayName,
RegistrarPool, OnlineVoiceRoutingPolicy, LineURI,
EnterpriseVoiceEnabled, PhoneNumber, PhoneNumberType


UserPrincipalName        : katrin.herman@universal-
telecoms.co.uk
DisplayName              : Katrin Herman
RegistrarPool            :
sippoolCWLGB101.infra.lync.com
OnlineVoiceRoutingPolicy :
LineUri                  :
EnterpriseVoiceEnabled   : False
PhoneNumber              :
PhoneNumberType          :
```

TIP

The username can be entered as "Katrin Herman" or katrin.herman@universal-telecoms.co.uk

Assigning a PSTN phone number to the user

In order to enable Direct Routing for a user, a full DID is required for that user (in E.164 format).

To assign this phone number to the user, use the following command:

POWERSHELL

```
Set-CsPhoneNumberAssignment -Identity "<user@domain>" -PhoneNumber "<e.164 number>" -PhoneNumberType DirectRouting
```

- The `PhoneNumber` should match the `Inbound Trunk Number` that was selected for the related phone extension!
- Assigning a phone number to a user using this CMDlet automatically enables Enterprise Voice for this user.

Example

```
> Set-CsPhoneNumberAssignment -Identity katrin.herman@universal-telecoms.co.uk -PhoneNumber +441632960201 -PhoneNumberType DirectRouting
```

TIP

The phone number (shown in the example as +441632960201) must be in the E.164 format, without any spaces or punctuation.

Assigning a Voice Routing Policy to the user

Now that the user has been assigned a phone number in the Microsoft Phone System, you will need to grant this user permission to use a Voice Routing Policy.

You can do it by running the following command:

POWERSHELL

```
Grant-CsOnlineVoiceRoutingPolicy -Identity "<user@domain>" -PolicyName "Via-NFON-Kxxxx"
```

Example

```
> Grant-CsOnlineVoiceRoutingPolicy -Identity katrin.herman@universal-telecoms.co.uk -PolicyName "Via-NFON-KAA11"
```

In this example, we have granted access to the Voice Routing Policy called *"Via-NFON-KAA11"* to *Katrin Herman*:

- In the examples contained within this documentation, this Voice Routing Policy is linked to the Online PSTN Usage called *"NFON-PBX-KAA11"*;
- This Online PSTN Usage is also linked to the Voice Route called *"Catchall-to-NFON-KAA11"*;
- Finally, the Voice Route is associated with the NFON SBC *"KAA11-01.customers.teams-pbx.cloud"* and a number pattern of ".*" (catch all);
- So, all calls made by Katrin to any phone number will be routed to the *KAA11* Cloudya tenant (**K account**), via the NFON SBC for Microsoft Teams.

Checking that the user configuration has been accepted

Run the following command to check that the configuration has been accepted:

POWERSHELL

```
Get-CsOnlineUser -Identity "<user@domain>" | select UserPrincipalName, DisplayName, RegistrarPool, OnlineVoiceRoutingPolicy, LineURI, EnterpriseVoiceEnabled, PhoneNumber, PhoneNumberType
```

You should check that:

- `LineURI` and `PhoneNumber` both return the user DID/Phone Number in the E.164 Format and are identical;
- `OnlineVoiceRoutingPolicy` should return the voice policy assigned to this Office 365 user (e.g. Via-NFON-PBX-KAA11)

Example

```
> Get-CsOnlineUser -Identity katrin.herman@universal-telecoms.co.uk |
select UserPrincipalName, DisplayName, RegistrarPool,
OnlineVoiceRoutingPolicy, LineURI, EnterpriseVoiceEnabled,
PhoneNumber, PhoneNumberType


UserPrincipalName        : katrin.herman@universal-telecoms.co.uk
DisplayName              : Katrin Herman
RegistrarPool            : sippoolCWLGB101.infra.lync.com
OnlineVoiceRoutingPolicy : Via-NFON-KAA11
LineUri                  : 441632960201
EnterpriseVoiceEnabled   : True
PhoneNumber              : 441632960201
PhoneNumberType          : DirectRouting
```

TIP

It sometimes takes a few minutes for the configuration to propagate within the Microsoft Phone System.

The dial pad in Microsoft Teams should appear. However, this might take up to 24 hours (time for Microsoft back end to synchronise). The user might need to log off and on, but not always.

- The dial pad will show the user DID in the national format.
- The user DID mentioned above should match the assigned DID for that user's extension in the NFON admin portal.

Removing Direct Routing from a Microsoft 365 user account

In order to remove Direct Routing and the associated configuration from a Microsoft 365 user account, you will need to:

1. Revoke access to the **Online Voice Routing Policy** for that user
2. Remove the phone number from the user account

Revoking access to the Online Voice Routing Policy

There isn't a CMDLet per-say to revoke access to a Voice Routing Policy for a user. Instead, you can replace the policy that is currently configured against the user account with `$Null`.

POWERSHELL

```
Grant-CsOnlineVoiceRoutingPolicy -Identity "
<user@domain>" -PolicyName $Null
```

TIP

It will take a few minutes for the changes to take effect

Example

```
> Grant-CsOnlineVoiceRoutingPolicy -Identity
katrin.herman@universal-telecoms.co.uk -PolicyName $Null
```

Removing the phone number from the user account

Now that we have revoked access to the Online Voice Routing Policy, we can proceed and remove the phone number from the user account. Removing the phone number will also disable Enterprise Voice for that user account.

POWERSHELL

```
Remove-CsPhoneNumberAssignment -Identity "<user@domain>"
-PhoneNumber "<e.164 number>" -PhoneNumberType
DirectRouting
```

Example

```
> Remove-CsPhoneNumberAssignment -Identity
katrin.herman@universal-telecoms.co.uk -PhoneNumber
+441632960201 -PhoneNumberType DirectRouting
```

Verifying your changes

You can easily verify that Enterprise Voice, and its associated configuration, has been removed from the user account by running the following command:

POWERSHELL

```
Get-CsOnlineUser -Identity "<user@domain>" | select
UserPrincipalName, DisplayName, RegistrarPool,
OnlineVoiceRoutingPolicy, LineURI,
EnterpriseVoiceEnabled, PhoneNumber, PhoneNumberType
```

You should check that:

- `LineURI`, `PhoneNumber` and `OnlineVoiceRoutingPolicy` are all empty;
- `EnterpriseVoiceEnabled` is shown as false

TIP

Remember that it might take a few minutes for the configuration changes to update on the user account!

Example

```
> Get-CsOnlineUser -Identity katrin.herman@universal-
telecoms.co.uk | select UserPrincipalName, DisplayName,
RegistrarPool, OnlineVoiceRoutingPolicy, LineURI,
EnterpriseVoiceEnabled, PhoneNumber, PhoneNumberType


UserPrincipalName        : katrin.herman@universal-
telecoms.co.uk
DisplayName              : Katrin Herman
RegistrarPool            :
sippoolCWLGB101.infra.lync.com
OnlineVoiceRoutingPolicy :
LineUri                  :
EnterpriseVoiceEnabled   : False
PhoneNumber              :
PhoneNumberType          :
```

Next

- Now that you have removed the Direct Routing configuration on the user account in the Microsoft Phone system, you can proceed to remove the bolt-on configuration on the user phone extension.

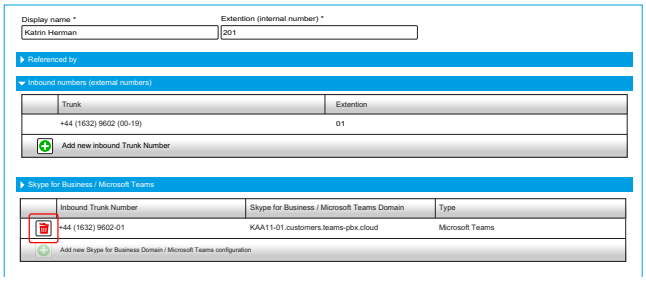
Next: Removing the Integration from a Cloudya phone extension

Removing the integration from a Cloudya phone extension

You cannot manually unassign the `MSTEAMS` pseudo-device from the phone device section nor delete it from the **Devices** section in the NFON Service Portal. Instead, you will need to remove the bolt-on configuration.

Deleting the bolt-on from the phone extension configuration

- Log into the NFON Service Portal
- Find the phone extension for which you want to remove the bolt-on
- Click `Edit` to open the phone extension configuration
- Press the delete (trash bin) icon next to the entry in the Skype for Business/Microsoft Teams section
- Save your changes for that phone extension



TIP

Upon saving, the Service Portal will automatically remove the `MSTEAMS` pseudo-device.

Using PowerShell to configure the Microsoft Phone System

PowerShell is a cross-platform task automation solution made up of a command-line shell, a scripting language and a configuration management framework. PowerShell runs on Windows, Linux and macOS.

For more information about PowerShell, please visit the Microsoft Documentation website.

PowerShell prerequisites

Installing the Microsoft Teams PowerShell module

If you haven't done it yet, you will need to install the Microsoft Teams PowerShell module. Installation instructions for this module are available in the documentation article on the Microsoft website: Install Microsoft Teams PowerShell Module.

Checking/changing execution policy

Don't forget to run PowerShell as an administrator: `Start Menu` > `PowerShell` > `Run as administrator`

Viewing the current execution policy settings

To view the current execution policy settings, use the `Get-ExecutionPolicy` cmdlet using the *List* parameter.

POWERSHELL

```
Get-ExecutionPolicy -List
```

You should get a list of scopes and the associated policy for each scope similar to this:

```
Get-ExecutionPolicy -List

        Scope ExecutionPolicy
        ----- ---------------
MachinePolicy       Undefined
   UserPolicy       Undefined
      Process       Undefined
  CurrentUser       Undefined
 LocalMachine    Unrestricted
```

Changing the execution policy settings

Set the ExecutionPolicy to *Unrestricted* at least for the *Process* scope.

POWERSHELL

```
Set-ExecutionPolicy -ExecutionPolicy Unrestricted -Scope
Process
```

- Confirm with `Y` for **Yes**.

Upon running the cmdlet, you should be presented with a message similar to this:

```
Set-ExecutionPolicy -ExecutionPolicy Unrestricted -Scope
Process

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"):
```

Using PowerShell

Check the version of the Microsoft Teams PowerShell module

Before going any further, you should ensure that the PowerShell module for Microsoft Teams is properly installed on your computer and is up-to-date.

The following command can be copied and pasted into the PowerShell window and run:

POWERSHELL

```
Get-InstalledModule -Name MicrosoftTeams
```

The **minimum version** required to configure Microsoft Direct Routing is **3.1.1**.

The output should be similar to the result below:

```
Get-InstalledModule -Name MicrosoftTeams

Version    Name
Repository           Description
-------    ----                                ---------
-           -----------
4.0.0      MicrosoftTeams                      PSGallery
Microsoft Teams cmdlets module for Windows Power...
```

Upgrading the PowerShell module for Microsoft Teams

If the version of the module is below 3.1.1, then you can upgrade the module installed on your computer by issuing the commands shown below.

POWERSHELL

```
Update-Module -name MicrosoftTeams
```

- Confirm with `Y` for **Yes**.

```
Update-Module -name MicrosoftTeams

Untrusted repository
You are installing the modules from an untrusted
repository. If you trust this repository, change its
InstallationPolicy value by running the Set-PSRepository
cmdlet. Are you sure you want to install the modules
from
'PSGallery'?
[Y] Yes  [A] Yes to All  [N] No  [L] No to All  [S]
Suspend  [?] Help (default is "N"): Y
```

Initiating a PowerShell session

TIP

Don't forget to run PowerShell as an **administrator**

Signing in via PowerShell

Before you can start configuring the call routing components, you will need to import the Microsoft Teams module for PowerShell and connect to your Microsoft 365 tenant.

The following command can be copied and pasted into the PowerShell window and run:

POWERSHELL

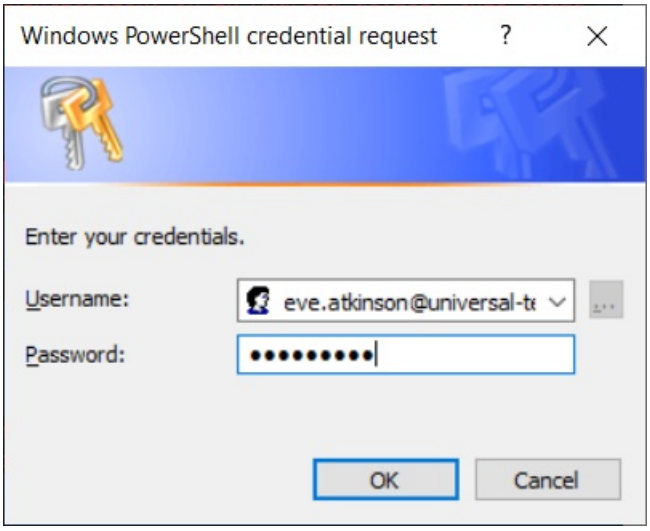
```
Import-Module MicrosoftTeams

$credential = Get-Credential

Connect-MicrosoftTeams -Credential $credential
```

1. Enter your Microsoft Office 365 username (it should be an administrator account that has been assigned the correct privileges or role to manage Microsoft Teams or Microsoft Teams communications. See this Microsoft article about administrator roles)
2. Enter the relevant password for this account
3. Click `OK`

Entering the series of commandlets shown on the left will ask for the administrator login credentials as shown in the image below:



After signing in, it should output something similar to the result below:

```
Account                                 Environment Tenant                                TenantId
-------                                 ----------- ------                                --------
eve.atkinson@universal-telecoms.co.uk AzureCloud  0f681d58-1742-40aa-a7a0-123456789abc 0f681d58-1742-40aa-a7a0-123456789abc
```

Verifying your connection

Before proceeding any further, you should ensure that you're connected to the correct Microsoft 365 tenant and that the additional domain required to connect to the NFON multi-tenant SBC is available.

POWERSHELL

```
Get-CsTenant | select DisplayName, VerifiedDomains
```

This will display the name of the Microsoft 365 tenant and all domains that have been verified and are associated with the tenant.

```
Get-CsTenant | select DisplayName, VerifiedDomains

DisplayName             VerifiedDomains
-----------             ---------------
Universal Telecoms Plc. {KAA11-01.customers.teams-
pbx.cloud, universaltelecoms.onmicrosoft.com, universal-
telecoms.co.uk}
```

TIP

The additional domain required in order to connect to the NFON multi-tenant SBC should feature in that list

Checking your tools

Now that you have ensured that you are connected to the right tenant, check that the commandlets you will need to configure the call routing components in Microsoft 365 Phone System are available to you.

You can do it by running the following commandlets:

POWERSHELL

```
gcm *CsOnlineVoiceRoute*
```

And then:

POWERSHELL

```
gcm *CsPhoneNumberAssignment*
```

TIP

This will show functions you have access to. If it matches with the above, then you can begin configuring the tenant.

This will output the following:

```
 > gcm *CsOnlineVoiceRoute*

CommandType     Name
Version    Source
-----------     ----
-------    ------
Function        Get-CsOnlineVoiceRoute
3.1.1      MicrosoftTeams
Function        New-CsOnlineVoiceRoute
3.1.1      MicrosoftTeams
Function        Remove-CsOnlineVoiceRoute
3.1.1      MicrosoftTeams
Function        Set-CsOnlineVoiceRoute
3.1.1      MicrosoftTeams
```

```
> gcm *CsPhoneNumberAssignment*

CommandType     Name
Version    Source
-----------     ----
-------    ------
Function        Remove-CsPhoneNumberAssignment
3.1.1      MicrosoftTeams
Function        Set-CsPhoneNumberAssignment
3.1.1      MicrosoftTeams


PS C:\windows\system32>
```

See also

- Microsoft documentation: Manage Teams with Teams PowerShell
- Microsoft Cmdlet reference for Teams

