

Dynamic Emergency Call Routing

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1 Overview

Description	With Microsoft Teams it is possible to configure and use a location-based dynamic emergency call routing. With your Cloud Connect SBV, you can use this feature. All calls to one of the supported emergency numbers will then be routed based on the location MS Teams client has detected.

	1.1 General routing of emergency numbers
Description	<p>Dynamic emergency call routing is supported by MS Teams for dedicated configured emergency numbers only. Only calls to these numbers contains a location information, regular calls don't contain location information.</p> <p>If you call a supported emergency number with a valid location information, the call will be routed based on this location. If location information is missing or invalid, the call will be routed based on the location you have configured on Sunrise Business Portal (https://sba.sunrise.ch/) for your CallerID. If this is also missing, the call will be routed based on the main location of your company.</p>

	1.2 General routing of emergency numbers
Description	<p>The following Emergency Services supports dynamic routing:</p> <ul style="list-style-type: none">• 112: general Emergency Number• 117: Police• 118: Fire Service• 143: «Helping Hand» counselling helpline• 144: Ambulance• 147: Helpline for children and young people (Pro Juventute) <p>For testing purposes only, the following number can be used:</p> <ul style="list-style-type: none">• 111: Sunrise Service Test Number (use only for testing MS Teams configuration).

	1.3 Housekey
Description	<p>To make dynamic emergency call routing working, the correct "Housekey" is required for each of your location. The "Housekey" you can find in your Sunrise Business Portal, where you can manage your static emergency call routing (based on CallerID) or you search in the tables provided by Swiss Post (https://swisspost.opendatasoft.com/)</p> <p>The "Housekey" is a unique identifier per building in Switzerland. This value must be added to your MS Teams Emergency Address in the attribute HNS (House Number Suffix).</p> <p>Examples:</p> <ul style="list-style-type: none">• Thurgauerstrasse 101B in 8152 Opfikon has "Housekey" 76516196• Zwingerstrasse 25, 4053 Basel has "Housekey" 40014653 <p>Prepare a list of all your locations with the "Housekey".</p>

	1.4 Presented address at Public Safety Answering Point (PSAP)
Description	<p>In Switzerland, not the whole address will be transmitted with your call to the Public Safety Answering Point (PSAP). Each PSAP looks up in a central database called "Directories NOT Services" (https://www.directoriesdata.ch/en/emergency-services-en/not-services) to find a matching address for your CallerID. This address will be presented to the agent. The presented address may not match to your current location. Dynamic emergency call routing only makes sure, you reach the correct PSAP, which is responsible for your current location.</p> <p>If presented address doesn't match to your regular workplace, please change the emergency address on your Sunrise Business Portal (SBP). This change will be uploaded once a week to "Directories NOT Services".</p>

	1.5 SIP – Trunk Requirements
Description	<p>If you use an SBV Cloud Connect with a Sunrise hosted SBC, everything is already prepared for dynamic emergency call routing.</p> <p>If you use a dedicated IMS SIP Trunk from Sunrise with an on-premise SBC, please contact our Service Desk or your Service Manager to enable dynamic emergency call routing on your trunk.</p>

2 Configuring MS Teams

Description	<p>To configure MS Teams for dynamic emergency call routing, please follow the official configuration guidelines of Microsoft for Direct Routing (not for Calling Plan) (https://docs.microsoft.com/en-us/microsoftteams/what-are-emergency-locations-addresses-and-call-routing)</p> <p>The next steps only show you a simple configuration for a company with two locations as example.</p>
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	<h3>2.1 Topology</h3>
Description	<p>This sample company has two locations (Basel and Opfikon). All users in Opfikon use the internet access on this location. Users in Basel subnet 10.20.0.64 connect to internet via WAN connection to Opfikon. Users in Basel subnet 192.168.102.0 use an own independent internet connection.</p> <p>The diagram illustrates a network topology. At the top, a PSTN cloud is connected to a Sunrise Hosted SBC, which in turn connects to the Internet cloud. Microsoft 365 is also connected to the Internet. The Internet cloud is connected to two public routers. The left router has a Public Router IP of 194.230.98.23 and connects to Location Basel. Location Basel is divided into two subnets: 192.168.102.0/24 and 10.20.0.64/26. The right router has a Public Router IP of 195.141.62.10 and connects to Location Opfikon, which has a subnet of 10.10.0.0/16. An MPLS cloud connects the two public routers, facilitating a WAN connection between the two locations.</p>
	<p>Figure 1: Sample Company Topology</p>

2.2 Emergency Address

Description

For each location, an emergency address must be created. Please search "Housekey" for each location before you start. You must use a Remote PowerShell to MS Teams, because field "House Number Suffix" (HNS) is not available as input field in Web UI. In this field, you must enter "Housekey" value. Execute the following cmdlet per location:

```
New-CsOnlineLisCivicAddress -Description "Office Basel" -CountryOrRegion CH -PostalCode 4053 -StreetName "Zwingerstrasse" -HouseNumber "25" -City "Basel" -HouseNumberSuffix "40014653" -CompanyName "Sunrise Communications AG" -Longitude 47.544100 -Latitude 7.593345
```

```
New-CsOnlineLisCivicAddress -Description "Headquarter Opfikon" -CountryOrRegion CH -PostalCode 8152 -StreetName "Thurgauerstrasse" -HouseNumber "101B" -City "Opfikon" -HouseNumberSuffix "76516196" -CompanyName "Sunrise Communications AG" -Longitude 47.421855 -Latitude 8.556210
```

After a location is validated, which will be done automatically seconds after creating a location, it cannot be changed. If you need to change them, remove existing location and create a new one.

2.3 Trusted IP Address

Description

MS Teams needs to know public IP Address of your Internet Router behind your internal Subnets exists. Only Users, which connects from one of this trusted IPs (or Subnets) can search for a location based on Subnet or BSSID.

You can use Remote PowerShell to add a Trusted IP:

```
New-CsTenantTrustedIPAddress -IPAddress "195.141.62.10" -MaskBits 32 -Description "Internet GW Opfikon"
New-CsTenantTrustedIPAddress -IPAddress "194.230.98.23" -MaskBits 32 -Description "Internet GW Basel"
```

You also can use Web UI for this: Teams Admin Portal, Locations, Network topology, Trusted IPs

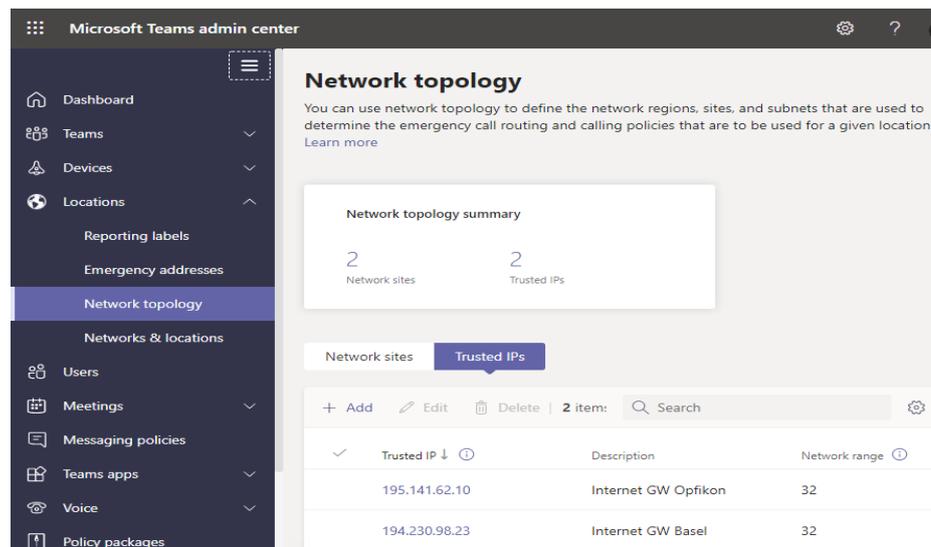


Figure 2: Trusted IPs

2.4 Network Sites

Description

Create a Network Site for each location and assign all internal subnets to this site.

```
$NetworkSiteBS = New-CsTenantNetworkSite -Identity "Basel" -
NetworkRegionID "Switzerland"
$NetworkSiteZH = New-CsTenantNetworkSite -Identity "Zuerich" -
NetworkRegionID "Switzerland"

New-CsTenantNetworkSubnet -SubnetID "10.20.0.64" -MaskBits 26 -
NetworkSiteID $NetworkSiteBS.Identity -Description "Basel subnet 1"
New-CsTenantNetworkSubnet -SubnetID "192.168.102.0" -MaskBits 24 -
NetworkSiteID $NetworkSiteBS.Identity -Description "Basel Subnet 2"
New-CsTenantNetworkSubnet -SubnetID "10.10.0.0" -MaskBits 16 -
NetworkSiteID $NetworkSiteZH.Identity -Description "Opfikon Subnet 1"
```

You also can use Web UI to configure Network Sites and Subnets:

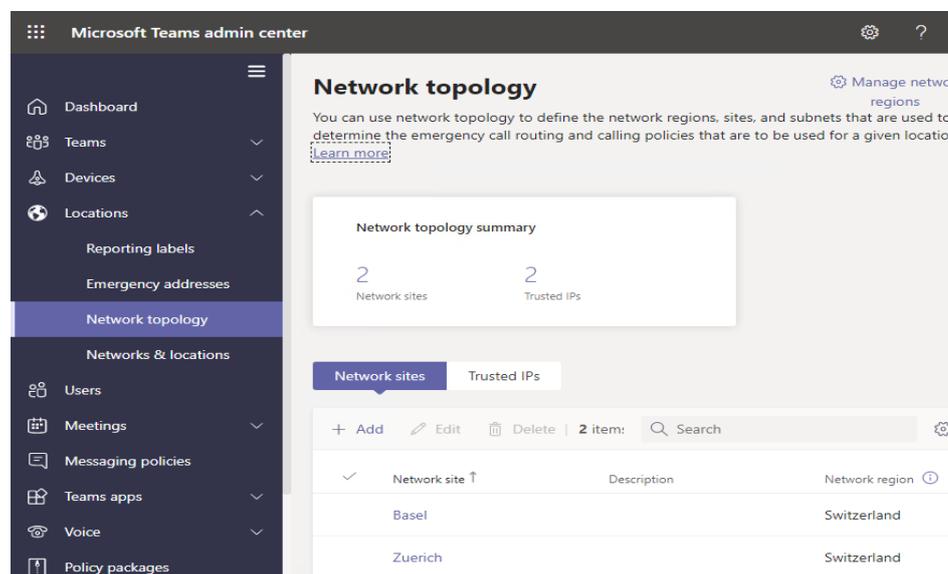


Figure 1: Network Topology

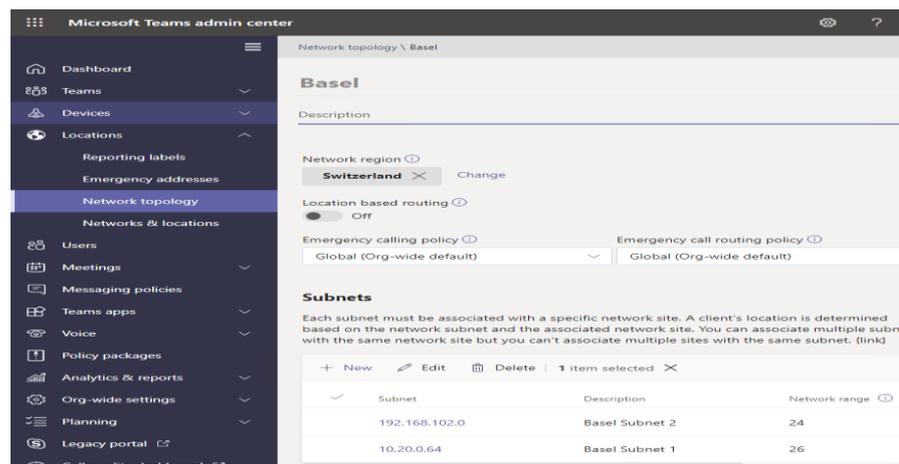
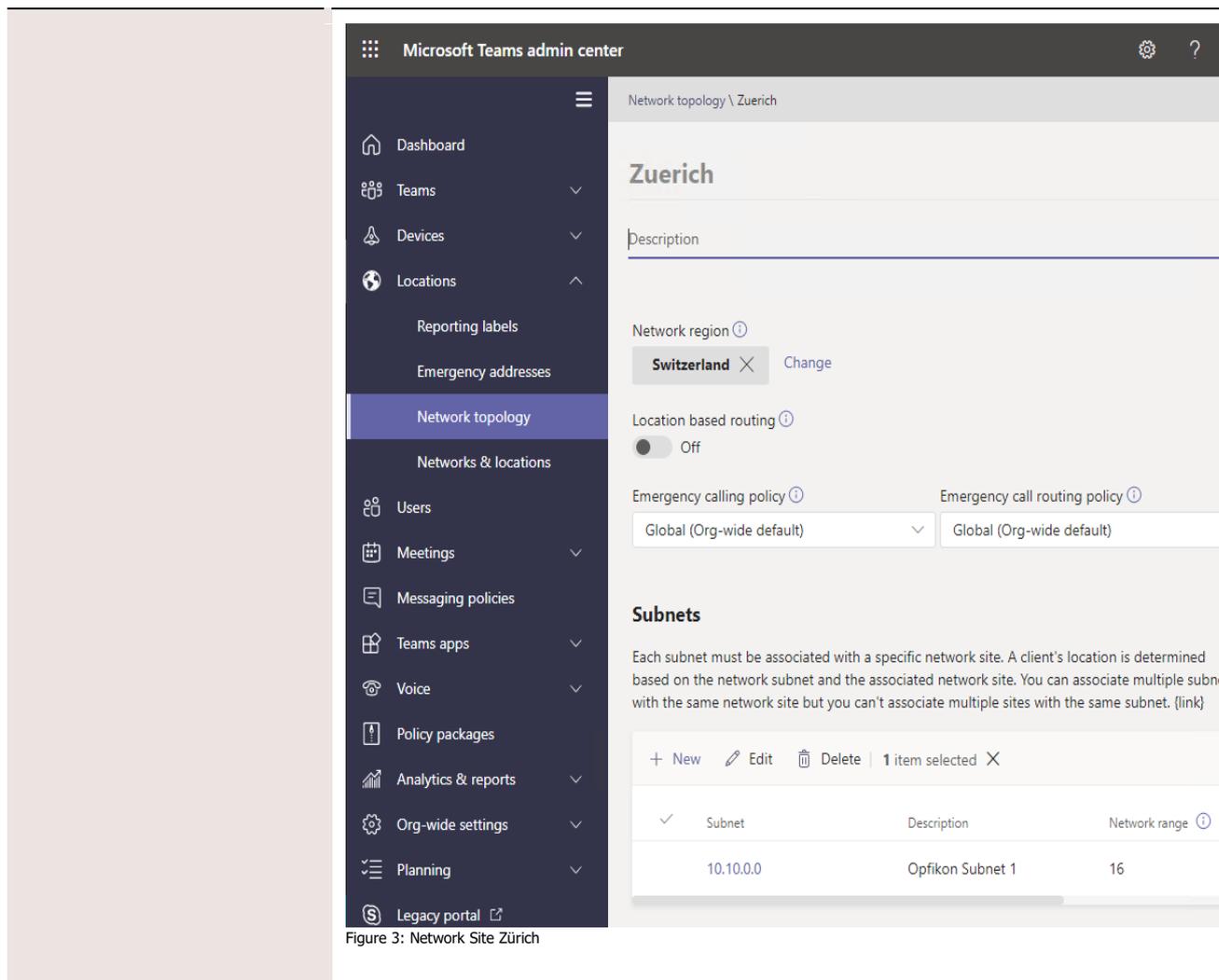


Figure 2: Network Site Basel



2.5 Networks & Locations

Description

Assign subnet to a location with following cmdlets. You can also WIFI Access Points. Refer Microsoft documentation, when switches or ports become supported (currently not supported).

```
Set-CsOnlineLisSubnet -Subnet 10.10.0.0 -LocationId $LocationZH.LocationId -Description "Opfikon Subnet 1"  
Set-CsOnlineLisSubnet -Subnet 10.20.0.64 -LocationId $LocationBS.LocationId -Description "Basel Subnet 1"  
Set-CsOnlineLisSubnet -Subnet 192.168.102.0 -LocationId $LocationBS.LocationId -Description "Basel Subnet 2"
```

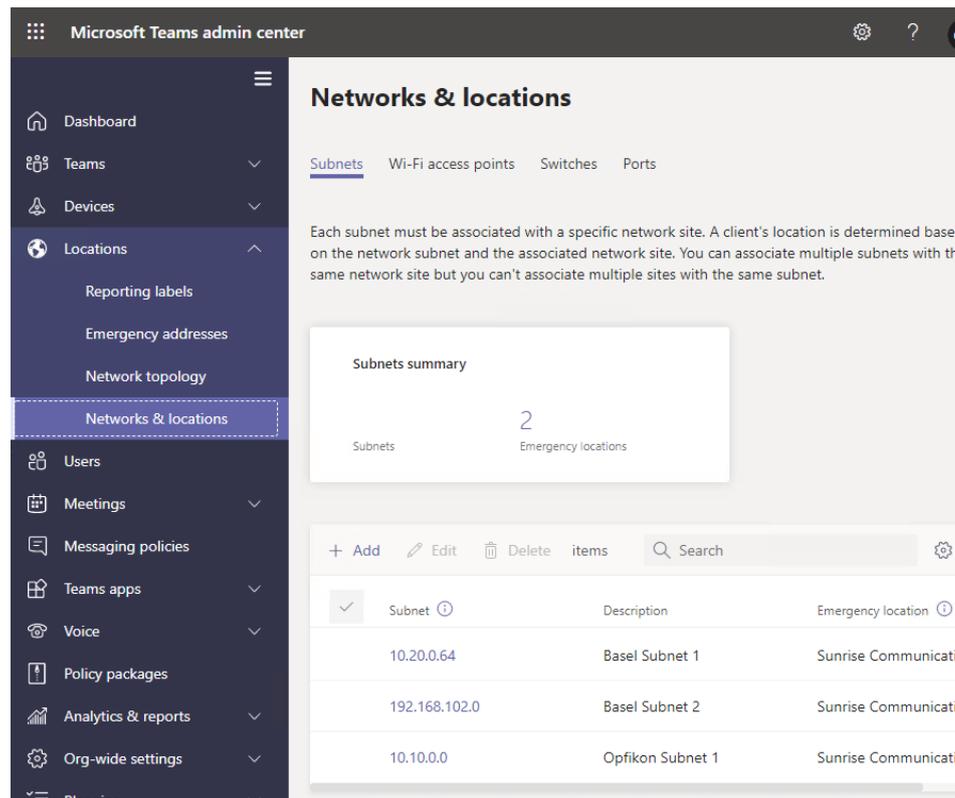


Figure 4: Networks & Locations

2.6 Emergency numbers

Description

Finally, you must configure all emergency numbers and assign an OnlinePSTNUsage which routes these calls to our SBC. Normally this PSTNUsage has been created with the name "Sunrise Unlimited".

```
$EmergencyNumberList = 111, 112, 117, 118, 143, 144, 147  
$OnlinePSTNUsage = "Sunrise Unlimited"
```

```
[System.Collections.ArrayList]$EmergencyNumbers = @()
```

```
$EmergencyNumberList | % {  
    $EmergencyNumber = New-CsTeamsEmergencyNumber -EmergencyDialString  
"$_" -OnlinePSTNUsage $OnlinePSTNUsage  
    $EmergencyNumbers.Add($EmergencyNumber)  
}
```

```
Set-CsTeamsEmergencyCallRoutingPolicy -Identity Global -EmergencyNumbers  
@{add=$EmergencyNumbers} -AllowEnhancedEmergencyServices $True
```

You also can use Web UI: Teams Portal, Voice, Emergency policies, Call routing policies, Global (Org-wide default): Make sure, option "Dynamic emergency calling" is activated.

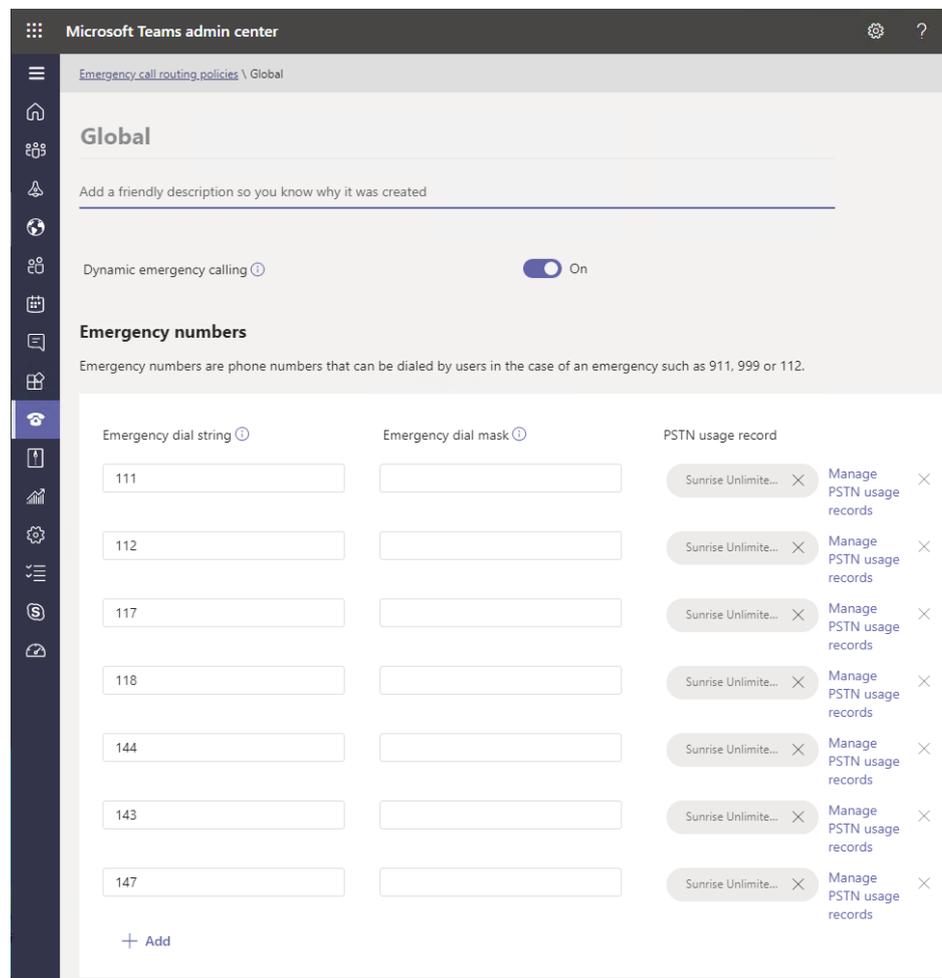
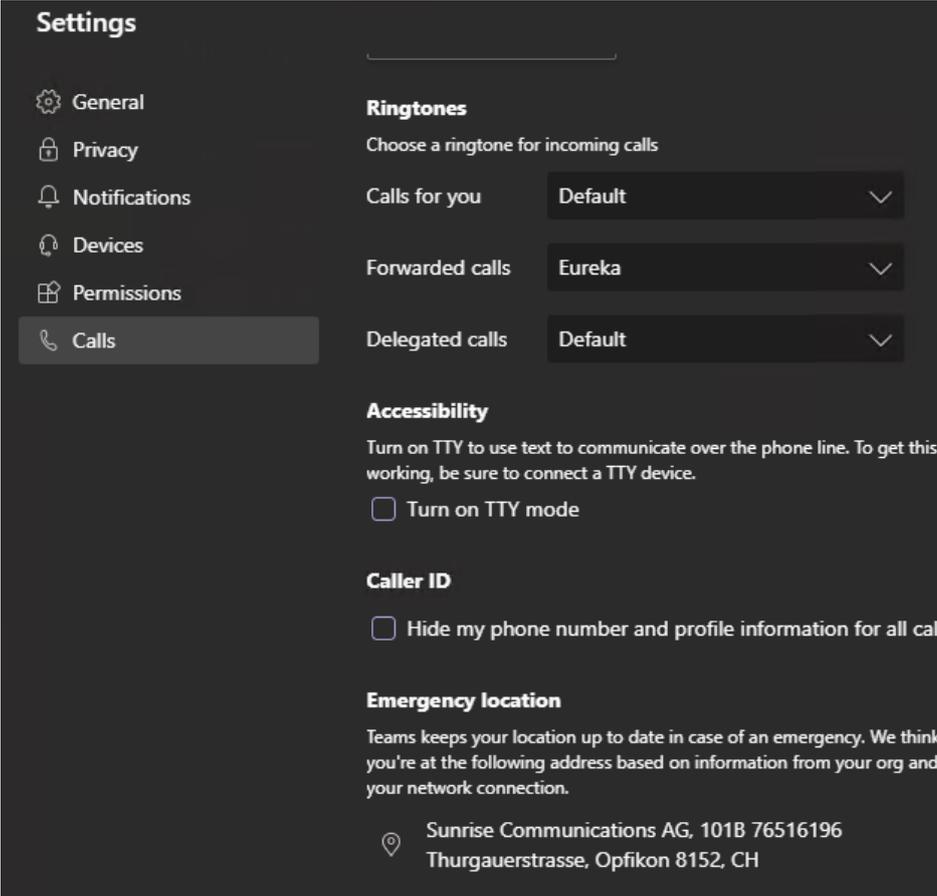


Figure 5: Emergency Numbers

3 Testing

<p>Description</p>	<p>After you have configured everything, it can take up to 2 hours, until location information is available on the Teams client. Please refer Microsoft documentation to check, which clients supports dynamic emergency call routing. Web client (Teams in browser) doesn't support it!</p> <p>To check, if your Teams client has detected the correct location, start your Teams client, click on your avatar, Settings, Calls and scroll down. If a location has been detected, you find a section "Emergency location".</p>  <p>Figure 6: Teams Client Client detected Emergency Location</p> <p>If you get a location, you can close Settings page and then dial test emergency number "111". Click to "Calling" tab in Teams client and enter phone number 111 and press Enter or click "Call".</p>
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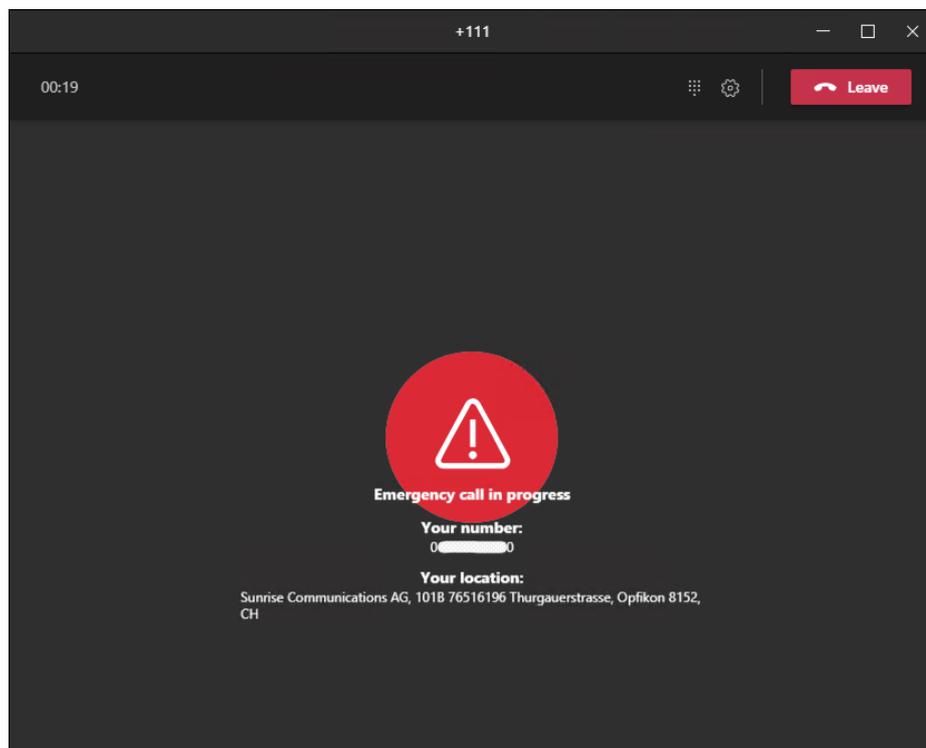


Figure 7: Teams Client Emergency Call

If you are sure, everything works as expected with test number, call a real emergency number. Identify yourself correctly and inform agent about this test call. Ask answering agent if you reached the correct PSAP for your physical location.

3.1 Debugging

Description

If no detected location is visible in Teams client, quit client and start again. If location is still not visible 24 hours after you have configured everything, verify over which IP address your client connects to internet and in which subnet your client is connected.
If your client has an IPv4 and IPv6 IP address, make sure, you have added both subnets in Teams Admin Portal.
If you normally use a web proxy for internet access and configured bypass proxy for all Microsoft services (highly suggested), connection to Microsoft could use another public IP than regular internet connections. Verify this with your network admin and make sure you have added this IP as "Trusted IP".
If your call doesn't present the red symbol and your CallerID in the conversation window, please check, if you have configured the dialed number as an emergency number.

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