

Configure Time Zones for the AMF

Operating Instructions

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Contents

1	Time Zones Overview	3
2	Prerequisites for Configuring Time Zones	4
3	Configure Time Zones	6
4	Manage Time Zones	10
4.1	List Configured Time Zones	10
4.2	Change Time Zone Values	10
4.3	Delete Time Zone Values	10
5	Check, Activate, and Checkpoint the Configuration	12
6	Perform a Health Check	13





1 Time Zones Overview

The Time Zones function sends the local time zone to the UE. The function allows the AMF to provide the UE with the local time of the geographical area where the UE is located at, for example, Initial Registration.

The local time is defined by assigning a time zone to a geographical area in the local AMF configuration. The NG tracking areas of a PLMN can be deployed over a geographically large area that can span over more than one time zone. When the UE moves between NG tracking areas, the AMF checks if there is a change in the local time zone of the UE and updates the UE if the time zone has changed.

For more information, see [Registration and Mobility Management for the AMF](#).

To display the configuration classes and parameters related to time zones, use the `get_config_area -can TimeZones` CLI command.



2 Prerequisites for Configuring Time Zones

The following prerequisite applies for configuring time zones:

- The answers to the questions in Table 1 must be known.

Table 1 Planning Phase Questions

Question	Related Parameter	Chosen Value
What is the name of the geographical area?	-gan GeographicalAreaName	
What is the MCC?	-mcc MobileCountryCode	
What is the MNC?	-mnc MobileNetworkCode	
What are the names of the first to the nth NG tracking area ranges?	-ntan NgTaRangeName	
What are the codes of the first and last NG tracking area of the first to the nth NG tracking area ranges?	-first FirstNgTrackingAreaCode -last LastNgTrackingAreaCode	
What is the name of the time zone of the stated geographical area? The names of the time zones can be found in the /usr/share/zoneinfo/ Linux directory. Valid names are either a file name or a directory and file name. See the following examples: — File name /usr/share/ zoneinfo/Iceland Iceland — Directory and file name	-tz TimeZoneGa	



Question	Related Parameter	Chosen Value
/usr/share/ zoneinfo/Europe/ Rome Europe/Rome		
What information needs to be sent to the UE in the Configuration Update Command message? For information about configuring the network identity, see PLMN Identification (CLI).	-nitzc NitzContent	
What is the name of the software configuration checkpoint?	-cpn CheckpointName	
What is the name of the software configuration release?	-rel ReleaseName	



3 Configure Time Zones

Note: If no time zone is configured, the time zone of the AMF is used by default.

Time Zones Configuration START

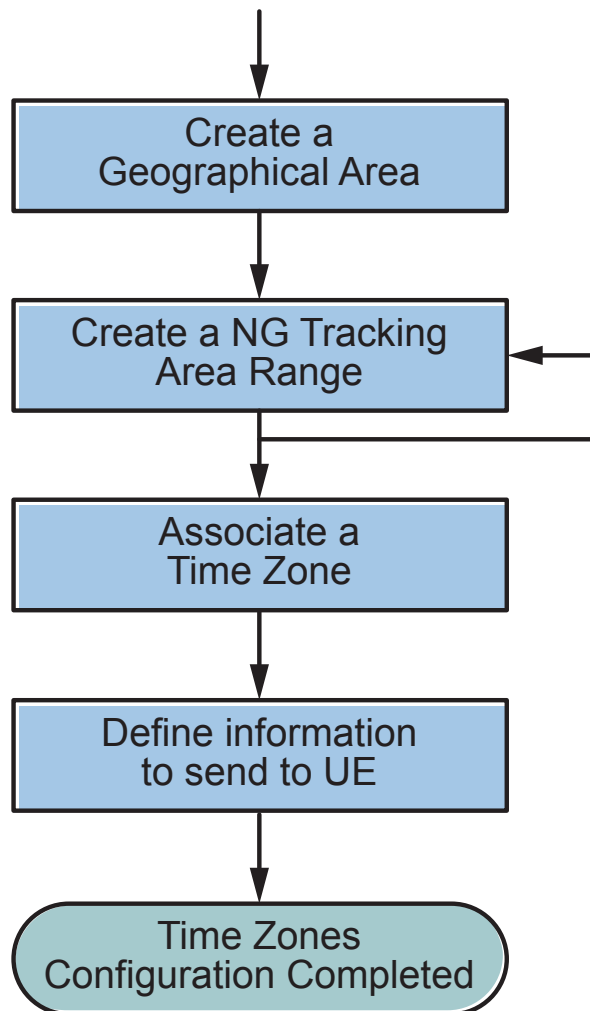


Figure 1 Steps for Configuring Time Zones on the AMF

It is possible to repeat the following steps as needed in order to define the configuration of a network.



Steps

1. Create a geographical area by selecting a unique name, using the `create_ga` CLI command.

```
gsh create_ga -gan <GeographicalAreaName>
```

Example

```
gsh create_ga -gan MSTZ
```

2. Create a NG tracking area range by selecting a name and providing the associated geographical area name, the MCC, the MNC, and the range by using the `create_ga_ngta_range` CLI command.

```
gsh create_ga_ngta_range -gan <GeographicalAreaName> -ntan  
<NgTaRangeName> -mcc <MobileCountryCode> -mnc <MobileNetworkCode> -  
first <FirstNgTrackingAreaCode> -last <LastNgTrackingAreaCode>
```

Example

```
gsh create_ga_ngta_range -gan MSTZ -ntan TAR1 -mcc 240 -mnc  
099 -first 7 -last 7
```

3. Optionally create the next NG tracking area range by selecting a name and providing the associated geographical area name, the MCC, the MNC and the range by using the `create_ga_ngta_range` CLI command.

```
gsh create_ga_ngta_range -gan <GeographicalAreaName> -ntan  
<NgTaRangeName> -mcc <MobileCountryCode> -mnc <MobileNetworkCode> -  
first <FirstNgTrackingAreaCode> -last <LastNgTrackingAreaCode>
```

Example

```
gsh create_ga_ngta_range -gan MSTZ -ntan TAR2 -mcc 240 -mnc  
099 -first 300 -last 400
```

4. Associate a time zone by providing the geographical area name and the name of the time zone by using the `create_ga_time_zone` CLI command.

```
gsh create_ga_time_zone -gan <GeographicalAreaName> -tz  
<TimeZoneGa>
```

Example

```
gsh create_ga_time_zone -gan MSTZ -tz CET
```

5. Configure whether the AMF sends the Network Identity and Time Zone (NITZ) information to the UE through a Configuration Update Command message through the `SendNitz` parameter by using the `modify_n1` CLI command.



Note: The default value of this parameter is `true`, which means that the AMF always sends the NITZ information to the UE through a Configuration Update Command message for the following procedures:

- Initial Registration
- Inter-AMF Mobility Registration
- EPS-to-5GS Mobility Registration
- Mobility Registration after Inter-AMF N2 Handover
- Mobility Registration after EPS-to-5GS Handover

However, for the following procedures, the AMF sends the NITZ information to the UE only when the NITZ configuration is changed:

- Periodic Registration
- Intra-AMF Mobility Registration
- Mobility Registration after Intra-AMF N2 Handover
- Mobility Registration after Xn Handover

If the `SendNitz` parameter is set to `false`, the AMF does not send the NITZ information to UE in a Configuration Update Command message after the Registration procedure even if NITZ configuration is changed, and the configuration change on the `NitzContent`, `SendNitzPReg` and `SendNitzIntraMobility` parameters does not take effect.

```
gsh modify_n1 -snitz <SendNitz>
```

Example

```
gsh modify_n1 -snitz true
```

6. Define what information to send to the UE in the Configuration Update Command message through the `NitzContent` parameter by using the `modify_n1` CLI command.

Note: The default value of this parameter is `cmp_info`, which means that the AMF sends both the Network Identity and Time Zone (NITZ) information to the UE.

```
gsh modify_n1 -snitz <SendNitz> -nitzc <NitzContent>
```

Example

```
gsh modify_n1 -snitz true -nitzc cmp_info
```



7. Configure whether the AMF sends the NITZ information to the UE through a Configuration Update Command message for the Periodic Registration procedure when the NITZ configuration is not changed through the `SendNitzPReg` parameter by using the `modify_n1` CLI command.

Note: The default value of this parameter is `false`, which means that the AMF does not send the NITZ information to the UE in a Configuration Update Command message for the Periodic Registration procedure when the NITZ configuration is not changed.

```
gsh modify_n1 -snitz <SendNitz> -nitzc <NitzContent> -snpr
<SendNitzPReg>
```

Example

```
gsh modify_n1 -snitz true -nitzc cmp_info -snpr true
```

8. Configure whether the AMF sends the NITZ information to the UE through a Configuration Update Command message for Intra-AMF Mobility Registration, Mobility Registration after Intra-AMF N2 Handover and Mobility Registration after Xn Handover procedures when the NITZ configuration is not changed through the `SendNitzIntraMobility` parameter by using the `modify_n1` CLI command.

Note: The default value of this parameter is `false`, which means that the AMF does not send the NITZ information to the UE in a Configuration Update Command message for Intra-AMF Mobility Registration, Mobility Registration after Intra-AMF N2 Handover and Mobility Registration after Xn Handover procedures when the NITZ configuration is not changed.

```
gsh modify_n1 -snitz <SendNitz> -nitzc <NitzContent> -snim
<SendNitzIntraMobility>
```

Example

```
gsh modify_n1 -snitz true -nitzc cmp_info -snim true
```



4 Manage Time Zones

4.1 List Configured Time Zones

To list configured time zones, do the following:

Steps

- List the configured geographical areas and their associated time zones by using the `list_ga_time_zone` CLI command.

```
gsh list_ga_time_zone -ps <PlanState> -gan <GeographicalAreaName>
-tz <TimeZoneGa>
```

Example

```
gsh list_ga_time_zone all
```

```
gsh list_ga_time_zone -tz CET
```

```
gsh list_ga_time_zone -gan <GeographicalAreaName> all
```

4.2 Change Time Zone Values

Steps

1. Change a time zone value of a specified geographical area by using the `modify_ga_time_zone` CLI command.

```
gsh modify_ga_time_zone -gan <GeographicalAreaName> -tz
<TimeZoneGa>
```

Example

```
gsh modify_ga_time_zone -gan ga1 -tz GMT
```

4.3 Delete Time Zone Values

Steps

1. Delete a time zone value of a specified geographical area by using the `delete_ga_time_zone` CLI command.



```
gsh delete_ga_time_zone -gan <GeographicalAreaName>
```

Example

```
gsh delete_ga_time_zone -gan ga1
```



5 Check, Activate, and Checkpoint the Configuration

A consistency check must always be performed before activating a pending configuration to guarantee that an inconsistent configuration is not activated. The pending configuration must be activated for the configuration to take effect.

The consistency check is performed on the configuration that becomes active after activation, that is, the active configuration combined with the changes in the pending configuration. When doing troubleshooting, it can be beneficial to run a consistency check with an empty pending configuration.

The consistency check can display warning or error messages about, for example, inconsistent or improper configuration commands. The consistency check does not guarantee full coverage in all situations.

To list the pending configuration, use the `list_config_pending` CLI command.

To cancel the pending configuration, use the `undo_config_pending` CLI command.

For more information about consistency rules and expected coverage, see [Configuration Management \(CLI\)](#).

Steps

1. Run a consistency check on the active and the pending configuration by using the `check_config` CLI command.
2. Activate the pending configuration by using the `activate_config_pending` CLI command.
3. Checkpoint the configuration to store the configuration changes persistently by using the `checkpoint` CLI command.



6 Perform a Health Check

Optionally, perform a health check to check the status of the PCC.

Steps

1. Log on to the CNOM.
2. Collect the data needed to perform a health check by using the Health Viewer application in the Embedded CNOM.

For more information about how to perform a health check and analyze health check data, see [Embedded CNOM for the PCC and Health Check](#).