



APPENDIX **A**

API Support

This appendix discusses API support for the Cisco NAC Guest Server. It describes the following:

- [Overview, page A-1](#)
- [Authentication Requirements, page A-1](#)
- [Time Format, page A-2](#)
- [API Operations, page A-2](#)
- [Status Codes, page A-14](#)
- [Error Codes, page A-14](#)
- [Valid Timezones, page A-14](#)

Overview

Cisco NAC Guest Server provides an API that allows you to perform certain operations using HTTP or HTTPS via POST or GET operations. The NAC Guest Server API is accessed via **<https://serveripaddress/sponsor/api/GuestAccount.php>** or **<http://serveripaddress//sponsor/api/GuestAccount.php>**.

To use this API, note the following:

- Competency with a programming language (e.g. C, Java, Perl, PHP) is required and you must install the relevant software on the machine that runs these programs to call this API.
- Cisco TAC does not support debugging of custom programs using the API. It only supports running API calls.

Authentication Requirements

Access over HTTP or HTTPS for the API is based upon the SSL settings for the web Administration interface as defined in [Accessing the Guest Server Using HTTP or HTTPS, page 3-9](#).

A valid username and password is also required to authenticate as a sponsor against the following components:

- Local database
- Active directory server as defined in admin settings

- LDAP server as defined in admin settings
- RADIUS as defined in admin settings

For example, the following call uses the username “sponsor” with password “mypass”:

```
http://1.1.1.1/sponsor/api/GuestAccount.php?username=sponsor&password=mypass&method=create&firstName=John&surname=Carter&email=test@cisco.com&role=DEFAULT&company=Cisco&mobileNumber=1234548434532&phoneCode=123&startTime=20100210T10%3A45%3A00&endTime=20100211T13%3A15%3A00&timezone=Europe%2FLondon&timeProfile=default
```


Note

All fields must be URL encoded. For example, date/time fields have been encoded so that the colon is replaced with %3A.

Time Format

All dates/times must be specified in a particular ISO 8601 format: YYYYMMDDTHH:MM:SS where:

- YYYY is the 4-digit year
- MM is the 2-digit month
- DD is the 2-digit day of the month
- T is a literal T
- HH is the 2-digit hour (24 hour format)
- MM is the 2-digit minute
- SS is the 2-digit second

Example: 20100304T08:45:30 is 4 March 2010, 08:45:30

See http://en.wikipedia.org/wiki/ISO_8601 for details.

API Operations

You can use the API by passing the details either through a POST or GET operation to the Cisco NAC Guest Server API.

The following example shows a GET operation to obtain the version of the API and Cisco NAC Guest Server.

```
https://1.1.1.1/sponsor/api/GuestAccount.php?username=sponsor&password=mypass&method=getVersion
```

All data is returned as XML.

XML Response

All responses are provided in the following XML format:

```
<?xml version="1.0"?>
<response>
  <status>
    <code>0</code>
```

```
<message>Success</message>
</status>
....
</response>
```

In the case of an error, the code and message elements are set with the error code and error text. Internal errors also return a <details> element that contains developer information to help address the issue.

create

The *create* method creates a guest user account in accordance with the sponsor's permissions.

Required In Parameters

- method (required): create
- username (required): Sponsor account username
- password (required): Sponsor account password
- firstName (based on policy): Guest user first name
- surname (based on policy): Guest user surname
- email (based on policy): Guest user email address
- role (required): The role in which the guest user is created
- company (based on policy): Guest user company name
- phonecode (based on policy): Telephone code for the Guest user mobile telephone (e.g. +44)
- mobilenumber (based on policy): Mobile telephone number for the Guest user
- timezone (required): The timezone in which the guest account is created (as detailed in [Valid Timezones, page A-14](#))
- option1 (based on policy): Optional data field 1
- option2 (based on policy): Optional data field 2
- option3 (based on policy): Optional data field 3
- option4 (based on policy): Optional data field 4
- option5 (based on policy): Optional data field 5
- startTime (required): The time the account is due to start
- endTime (required): The time the account should end
- timeProfile (required): The time profile to use when creating the account

create Example Use

Step 1 The following example creates an account with the following guest details:

First Name: John

Surname: Carter

Email: johncart@cisco.com

Role: DEFAULT (as created in the user role interface)

Company: Cisco

Mobile Number (cellphone): 12345 48434532

Phone Code: 123

Start Time: 29th November 2008 (midnight)

EndTime: 30th November 2008 (midnight)

Timezone: Europe/London

Time Profile: StartEnd (as created in the time profile user interface)

Step 2 Call the API as follows:

```
http://x.x.x.x/sponsor/api/GuestAccount.php?username=local&password=local&method=create&firstName=John&surname=Carter&email=johncart%40cisco.com&role=DEFAULT&company=Cisco&mobileNumber=12345+48434532&phoneCode=123&startTime=2008-11-29&endTime=2008-11-30&timezone=Europe%2FLondon&timeProfile=StartEnd
```

Step 3 If successful, a response is returned:

```
<?xml version="1.0"?>
<response>
  <status>
    <code>0</code>
    <message>Success</message>
  </status>
  <account/>
  <account>
    <id>815</id>
    <firstName>John</firstName>
    <surname>Carter</surname>
    <company>Cisco</company>
    <email>johncart@cisco.com</email>
    <mobileNumber>12345 48434532</mobileNumber>
    <phoneCode>123</phoneCode>
    <option1/>
    <option2/>
    <option3/>
    <option4/>
    <option5/>
    <username>JohnCarter10</username>
    <password>!B,4N!32(F1{VJ2</password>
    <status>1</status>
    <bulkId/>
    <timezone>Europe/London</timezone>
    <startTimeT>2008-11-29T00:00:00+00:00</startTimeT>
    <endTimeT>2008-11-30T00:00:00+00:00</endTimeT>
    <role/>
    <createdTime/>
    <modifiedUsername>1</modifiedUsername>
    <timeProfile>
      <id>2</id>
      <name>StartEnd</name>
      <description/>
      <duration>0</duration>
      <accountType>1</accountType>
      <durationUnit>Days</durationUnit>
      <durationInUnits>0</durationInUnits>
      <restriction>
        <id>43</id>
        <weekDay>1</weekDay>
        <startTime>00:00</startTime>
        <endTime>08:59</endTime>
      </restriction>
    </timeProfile>
  </account>
</response>
```

```
</restriction>
<restriction>
  <id>45</id>
  <weekDay>3</weekDay>
  <startTime>00:00</startTime>
  <endTime>08:59</endTime>
</restriction>
<restriction>
  <id>50</id>
  <weekDay>3</weekDay>
  <startTime>17:00</startTime>
  <endTime>23:59</endTime>
</restriction>
<restriction>
  <id>51</id>
  <weekDay>4</weekDay>
  <startTime>17:00</startTime>
  <endTime>23:59</endTime>
</restriction>
<restriction>
  <id>47</id>
  <weekDay>5</weekDay>
  <startTime>00:00</startTime>
  <endTime>08:59</endTime>
</restriction>
<restriction>
  <id>54</id>
  <weekDay>7</weekDay>
  <startTime>00:00</startTime>
  <endTime>23:59</endTime>
</restriction>
</timeProfile>
</account>
</response>
```

edit

The *edit* method edits an existing user account in accordance with sponsor's permissions.

You may edit any of the fields associated with an existing account with the following exceptions:

- start time
- role
- time profile
- time zone

To edit an account, you must supply the account ID as returned by the [create, page A-3](#) method.

Required In Parameters

- method (required): edit
- id (required): The database ID of the account to be edited
- username (required): Sponsor account username
- password (required): Sponsor account password
- firstName (optional): Guest user first name

- surname (optional): Guest user surname
- email (optional): Guest user email address
- group (optional): The role in which the guest user is created
- company (optional): Guest user company name
- phonecode (optional): Telephone code for the Guest user mobile telephone (e.g. +44)
- cellnumber (optional): Cell telephone number for the Guest user
- timezone (optional): The timezone in which the guest account is created (as detailed in [Valid Timezones, page A-14](#))
- option1 (optional): Optional data field 1
- option2 (optional): Optional data field 2
- option3 (optional): Optional data field 3
- option4 (optional): Optional data field 4
- option5 (optional): Optional data field 5
- startTime (optional): The time the account is due to start
- endTime (optional): The time the account should end
- timeProfile (optional): The time profiler to use when creating the account

edit Example Use

The following example changes the mobile phone (cell phone) number for the account with ID 794:

```
http://x.x.x.x/sponsor/api/GuestAccount.php?username=local&password=local&method=edit&id=794&mobileNumber=12345678
```

The full account detail is returned as with the [getDetails, page A-8](#) method.

```
<?xml version="1.0"?>
<response>
  <status>
    <code>0</code>
    <message>Success</message>
  </status>
  <account/>
  <account>
    <id>794</id>
    <firstName>John</firstName>
    <surname>Carter</surname>
    <company>Cisco</company>
    <email>johncart@cisco.com</email>
    <mobileNumber>12345678</mobileNumber>
    <phoneCode>123</phoneCode>
    <option1>1</option1>
    <option2>1</option2>
    <option3>1</option3>
    <option4>1</option4>
    <option5>1</option5>
    <username>jcarter</username>
    <password>cisco</password>
    <status>1</status>
    <bulkId/>
    <timezone>Europe/London</timezone>
    <startTimeT>2008-10-28T00:00:00+00:00</startTimeT>
```

```

<endTimeT>2008-10-29T00:00:00+00:00</endTimeT>
<role/>
<createdTime/>
<modifiedUsername/>
<usage>
  <startTime>2008-08-07T04:06:32+01:00</startTime>
  <endTime>2008-08-07T04:06:33+01:00</endTime>
  <ipAddress>4.5.6.7</ipAddress>
</usage>
<usage>
  <startTime>2008-10-02T22:00:00+01:00</startTime>
  <endTime>2008-10-03T00:30:00+01:00</endTime>
  <ipAddress>4.5.6.7</ipAddress>
</usage>
<timeProfile>
  <id>2</id>
  <name>StartEnd</name>
  <description/>
  <duration>0</duration>
  <accountType>1</accountType>
  <durationUnit>Days</durationUnit>
  <durationInUnits>0</durationInUnits>
  <restriction>
    <id>43</id>
    <weekDay>1</weekDay>
    <startTime>00:00</startTime>
    <endTime>08:59</endTime>
  </restriction>
  <restriction>
    <id>45</id>
    <weekDay>3</weekDay>
    <startTime>00:00</startTime>
    <endTime>08:59</endTime>
  </restriction>
  <restriction>
    <id>50</id>
    <weekDay>3</weekDay>
    <startTime>17:00</startTime>
    <endTime>23:59</endTime>
  </restriction>
  <restriction>
    <id>51</id>
    <weekDay>4</weekDay>
    <startTime>17:00</startTime>
    <endTime>23:59</endTime>
  </restriction>
  <restriction>
    <id>47</id>
    <weekDay>5</weekDay>
    <startTime>00:00</startTime>
    <endTime>08:59</endTime>
  </restriction>
  <restriction>
    <id>54</id>
    <weekDay>7</weekDay>
    <startTime>00:00</startTime>
    <endTime>23:59</endTime>
  </restriction>
</timeProfile>
</account>
</response>

```

getDetails

The *getDetails* API gets a user's account details in accordance with the sponsor's permissions.

Required In Parameters

- method (required): getDetails
- username (required): Sponsor account username
- password (required): Sponsor account password
- id (one required): ID of the account to be retrieved

getDetails Example Use

- Step 1** To get details for an existing account, use the *getDetails* API call, passing in the ID of the account as returned by the [create, page A-3](#) method:

```
http://x.x.x.x/sponsor/api/GuestAccount.php?username=local&password=local&method=getDetails&id=815
```

- Step 2** If successful the following response will be returned:

```
<?xml version="1.0"?>
<response>
  <status>
    <code>0</code>
    <message>Success</message>
  </status>
  <account/>
  <account>
    <id>815</id>
    <firstName>John</firstName>
    <surname>Carter</surname>
    <company>Cisco</company>
    <email>johncart@cisco.com</email>
    <mobileNumber>12345 48434532</mobileNumber>
    <phoneCode>123</phoneCode>
    <option1>aaa</option1>
    <option2>bbb</option2>
    <option3/>
    <option4>ddd</option4>
    <option5>eee</option5>
    <username>jcarter</username>
    <password>*****</password>
    <status>1</status>
    <bulkId/>
    <timezone>Europe/London</timezone>
    <startTimeT>2008-10-29T00:00:00+00:00</startTimeT>
    <endTimeT>2008-10-30T00:00:00+00:00</endTimeT>
    <role/>
    <createdTime/>
    <modifiedUsername/>
    <usage>
      <startTime>2008-08-07T04:06:32+01:00</startTime>
      <endTime>2008-08-07T04:06:33+01:00</endTime>
      <ipAddress>4.5.6.7</ipAddress>
    </usage>
    <usage>
      <startTime>2008-10-02T22:00:00+01:00</startTime>
      <endTime>2008-10-03T00:30:00+01:00</endTime>
```



```

    <ipAddress>4.5.6.7</ipAddress>
  </usage>
  <timeProfile>
    <id>2</id>
    <name>StartEnd</name>
    <description/>
    <duration>0</duration>
    <accountType>1</accountType>
    <durationUnit>Days</durationUnit>
    <durationInUnits>0</durationInUnits>
    <restriction>
      <id>43</id>
      <weekDay>1</weekDay>
      <startTime>00:00</startTime>
      <endTime>08:59</endTime>
    </restriction>
    <restriction>
      <id>45</id>
      <weekDay>3</weekDay>
      <startTime>00:00</startTime>
      <endTime>08:59</endTime>
    </restriction>
    <restriction>
      <id>50</id>
      <weekDay>3</weekDay>
      <startTime>17:00</startTime>
      <endTime>23:59</endTime>
    </restriction>
    <restriction>
      <id>51</id>
      <weekDay>4</weekDay>
      <startTime>17:00</startTime>
      <endTime>23:59</endTime>
    </restriction>
    <restriction>
      <id>47</id>
      <weekDay>5</weekDay>
      <startTime>00:00</startTime>
      <endTime>08:59</endTime>
    </restriction>
    <restriction>
      <id>54</id>
      <weekDay>7</weekDay>
      <startTime>00:00</startTime>
      <endTime>23:59</endTime>
    </restriction>
  </timeProfile>
</account>
</response>

```

suspend

The *suspend* method suspends a user account in accordance with sponsor's permissions.

Required In Parameters

- method (required): suspend
- username (required): Sponsor account username

- password (required): Sponsor account password
- id (required): The database ID of the account to be suspended

suspend Example Use

The `suspend` method suspends the account and returns the same XML response as [getDetails, page A-8](#).

```
http://x.x.x.x/sponsor/api/GuestAccount.php?username=local&password=local&method=suspend&&id=815
```

notifyEmail

The `notifyEmail` method sends an email message to the guest's email account. It returns the same XML as [getDetails, page A-8](#).

Required In Parameters

- method (required): `notifyEmail`
- username (required): Sponsor account username
- password (required): Sponsor account password
- id (required): The database ID of the account to be emailed
- from (required): The email address from which to send the email
- to (required): the email address to send the email to

notifyEmail Example Use

```
http://x.x.x.x/sponsor/api/GuestAccount.php?username=local&password=local&method=notifyEmail.&&&id=815.
```

notifySms

The `notifySms` method sends an SMS message to the guest's mobile (cell) phone. It returns the same XML as [getDetails, page A-8](#).

Required In Parameters

- method (required): `notifySms`
- username (required): Sponsor account username
- password (required): Sponsor account password
- id (required): The database ID of the account to be emailed

notifySms Example Use

```
http://x.x.x.x/sponsor/api/GuestAccount.php?username=local&password=local&method=notifySms.&&&id=815.
```

getVersion

The *getVersion* method shows the current API version.

Required In Parameters

- method (required): getVersion
- username (required): Sponsor account username
- password (required): Sponsor account password

getVersion Example Use

A call return a response of the form:

```
<?xml version="1.0"?>
<response>
  <status>
    <code>0</code>
    <message>Success</message>
  </status>
  <appName>Cisco NAC Guest Server</appName>
  <version>2.0.2</version>
  <majorVersion>2</majorVersion>
  <minorVersion>0</minorVersion>
  <maintenanceVersion>2</maintenanceVersion>
</response>
```

search

The *search* API returns guest account details for reporting purposes according to the sponsor's permissions and configuration, as per the [Managing Guest Accounts, page 17-15](#) of the sponsor interface.



Note

The *search* API is only available from version 2.0.1 and later.

Required In Parameters

- username (required): sponsor account username
- password (required): sponsor account password
- method (required): search
- sponsor (optional): sponsor username
- firstName (optional): guest user first name
- surname (optional): guest user surname
- company (optional): guest user company name
- email (optional): guest user email address
- ipAddress (optional)
- startTime (optional): YYYY-MM-DD
- endTime (optional): YYYY-MM-DD

- timezone (optional): Timezone in which the account is created
- option1 (optional):
- option2 (optional):
- option3 (optional):
- option4 (optional):
- option5 (optional):
- statusInactive (optional):
- statusActive (optional):
- statusExpired (optional):
- statusSuspended (optional):

search Example Use

The required parameters are mandatory. The optional parameters serve to subset the data returned. If the start and end date are not specified, then accounts spanning the last 24 hours are returned.

The following example returns details of active guest accounts between 3rd March 2009 and 15th April 2009.

`http://x.x.x.x/sponsor/api/GuestAccount.php?username=local&password=local&method=search&startTime=2009-03-03&endTime=2009-04-15&statusActive=1`

If successful, the following response will be returned.

```
<response>
  <status>
    <code>0</code>
    <message>Success</message>
  </status>
  <item>
    <id>2005</id>
    <firstName>Jim</firstName>
    <surname>Bean</surname>
    <company>Beans Brewery</company>
    <email>jim@bean.com</email>
    <username> jim@bean.com </username>
    <password>Es3TDdd3</password>
    <status>2</status>
    <mobileNumber>782394928</mobileNumber>
    <phoneCode>1</phoneCode>
    <timezone>America/Los_Angeles</timezone>
    <option1/>
    <option2/>
    <option3/>
    <option4/>
    <option5/>
    <startTimeT>2009-04-01T04:40:00-07:00</startTimeT>
    <endTimeT>2009-04-06T06:59:00-07:00</endTimeT>
    <role>Default</role>
    <sponsorId>196</sponsorId>
    <sponsor>sam</sponsor>
    <timeProfileId>1</timeProfileId>
    <timeProfile>default</timeProfile>
  </item>
  <item>
    ...further account details meeting the request criteria...
```

```

</item>
<item>
  ...further account details meeting the request criteria...
</item>
<item>
  ...further account details meeting the request criteria...
</item>
</response>

```

search Example Use with StartTime, EndTime, Timezone

The “timezone” parameter refers to the Timezone in which the account has been created.

The following example returns details of active guest accounts created with time zone “Europe/Moscow”, where the start time and end time overlap with the specified start time (2012-07-01 21:22:00) and end time (2012-07-02 23:59:00).

The “timezone” is the mandatory parameter for the “search” API to fetch the records for the specified Start Time / End Time, in the search query.

<http://x.x.x.x/sponsor/api/GuestAccount.php?username=local&password=local&method=search&start Time=2012-07-01T21:22:00+01:00&endTime=2012-07-02T23:59:00+01:00&timezone=Europe%2FMoscow>

If successful, the following response is returned:

```

<response>
  <status>
    <code>0</code>
    <message>Success</message>
  </status>
  <item>
    <id>2005</id>
    <firstName>Jim</firstName>
    <surname>Bean</surname>
    <company>Beans Brewery</company>
    <email>jim@bean.com</email>
    <username>jim@bean.com</username>
    <password>Es3Tddd3</password>
    <status>3</status>
    <mobileNumber>782394928</mobileNumber>
    <phoneCode>1</phoneCode>
    <timezone>Europe/Moscow</timezone>
    <option1/>
    <option2/>
    <option3/>
    <option4/>
    <option5/>
    <startTimeT>2012-07-01T13:44:00+04:00</startTimeT>
    <endTimeT>2012-07-01T15:50:00+04:00</endTimeT>
    <role>Default</role>
    <sponsorId>196</sponsorId>
    <sponsor>sam</sponsor>
    <timeProfileId>1</timeProfileId>
    <timeProfile>default</timeProfile>
  </item>
</response>

```

If you run search API without the timezone parameter, then the sponsor’s time zone is applied to the start time and end time. The following query returns records with the timezone of the user "local".

<http://x.x.x.x/sponsor/api/GuestAccount.php?username=local&password=local&method=search&start Time=2012-07-01T10:52:00&endTime=2012-07-03T01:30:00>

The start time and end time parameters are displayed in the time zone in which the users are created.

Status Codes

The account status is returned via XML and contains the following values:

- Status inactive = 1
- Status active = 2
- Status expired = 3
- Status suspended = 4

Error Codes

The following error codes are returned in the <code> element of the response.

Value - Description:

- Value 0—No error
- Value 1—Internal application error
- Value 100—Incorrect sponsor username and/or password
- Value 101—Cannot access API via HTTPS (controlled by administrator)
- Value 102—Cannot access API via HTTP (controlled by administrator)
- Value 1000—Some required fields are missing (listed in the message)
- Value 1001—Sending SMS messages disabled by administrator
- Value 1002—Sending Emails disabled by administrator
- Value 1003—The passed account ID does not exist
- Value 1004—Some fields are incorrect (listed in the message)
- Value 1005—Some fields cannot be changed using the edit method

Valid Timezones

Africa/Abidjan Africa/Accra Africa/Addis_Ababa Africa/Algiers Africa/Asmara Africa/Bamako
 Africa/Bangui Africa/Banjul Africa/Bissau Africa/Blantyre Africa/Brazzaville Africa/Bujumbura
 Africa/Cairo Africa/Casablanca Africa/Ceuta Africa/Conakry Africa/Dakar Africa/Dar_es_Salaam
 Africa/Djibouti Africa/Douala Africa/El_Aaiun Africa/Freetown Africa/Gaborone Africa/Harare
 Africa/Johannesburg Africa/Kampala Africa/Khartoum Africa/Kigali Africa/Kinshasa Africa/Lagos
 Africa/Libreville Africa/Lome Africa/Luanda Africa/Lubumbashi Africa/Lusaka Africa/Malabo
 Africa/Maputo Africa/Maseru Africa/Mbabane Africa/Mogadishu Africa/Monrovia Africa/Nairobi
 Africa/Ndjamena Africa/Niamey Africa/Nouakchott Africa/Ouagadougou Africa/Porto-Novo
 Africa/Sao_Tome Africa/Tripoli Africa/Tunis Africa/Windhoek America/Adak America/Anchorage
 America/Anguilla America/Antigua America/Araguaina America/Argentina/Buenos_Aires
 America/Argentina/Catamarca America/Argentina/Cordoba America/Argentina/Jujuy
 America/Argentina/La_Rioja America/Argentina/Mendoza America/Argentina/Rio_Gallegos
 America/Argentina/San_Juan America/Argentina/Tucuman America/Argentina/Ushuaia

America/Aruba America/Asuncion America/Atikokan America/Bahia America/Barbados
 America/Belem America/Belize America/Blanc-Sablon America/Boa_Vista America/Bogota
 America/Boise America/Cambridge_Bay America/Campo_Grande America/Cancun America/Caracas
 America/Cayenne America/Cayman America/Chicago America/Chihuahua America/Costa_Rica
 America/Cuiaba America/Curacao America/Danmarkshavn America/Dawson America/Dawson_Creek
 America/Denver America/Detroit America/Dominica America/Edmonton America/Eirunepe
 America/El_Salvador America/Fortaleza America/Glace_Bay America/Godthab America/Goose_Bay
 America/Grand_Turk America/Grenada America/Guadeloupe America/Guatemala America/Guayaquil
 America/Guyana America/Halifax America/Havana America/Hermosillo America/Indiana/Indianapolis
 America/Indiana/Knox America/Indiana/Marengo America/Indiana/Petersburg
 America/Indiana/Tell_City America/Indiana/Vevay America/Indiana/Vincennes
 America/Indiana/Winamac America/Inuvik America/Iqaluit America/Jamaica America/Juneau
 America/Kentucky/Louisville America/Kentucky/Monticello America/La_Paz America/Lima
 America/Los_Angeles America/Maceio America/Managua America/Manaus America/Martinique
 America/Mazatlan America/Menominee America/Merida America/Mexico_City America/Miquelon
 America/Moncton America/Monterrey America/Montevideo America/Montreal America/Montserrat
 America/Nassau America/New_York America/Nipigon America/Nome America/Noronha
 America/North_Dakota/Center America/North_Dakota/New_Salem America/Panama
 America/Pangnirtung America/Paramaribo America/Phoenix America/Port-au-Prince
 America/Port_of_Spain America/Porto_Velho America/Puerto_Rico America/Rainy_River
 America/Rankin_Inlet America/Recife America/Regina America/Resolute America/Rio_Branco
 America/Santiago America/Santo_Domingo America/Sao_Paulo America/Scoresbysund
 America/Shiprock America/St_Johns America/St_Kitts America/St_Lucia America/St_Thomas
 America/St_Vincent America/Swift_Current America/Tegucigalpa America/Thule
 America/Thunder_Bay America/Tijuana America/Toronto America/Tortola America/Vancouver
 America/Whitehorse America/Winnipeg America/Yakutat America/Yellowknife Antarctica/Casey
 Antarctica/Davis Antarctica/DumontDUrville Antarctica/Mawson Antarctica/McMurdo
 Antarctica/Palmer Antarctica/Rothera Antarctica/South_Pole Antarctica/Syowa Antarctica/Vostok
 Arctic/Longyearbyen Asia/Aden Asia/Almaty Asia/Amman Asia/Anadyr Asia/Aqtou Asia/Aqtobe
 Asia/Ashgabat Asia/Baghdad Asia/Bahrain Asia/Baku Asia/Bangkok Asia/Beirut Asia/Bishkek
 Asia/Brunei Asia/Calcutta Asia/Choibalsan Asia/Chongqing Asia/Colombo Asia/Damascus Asia/Dhaka
 Asia/Dili Asia/Dubai Asia/Dushanbe Asia/Gaza Asia/Harbin Asia/Hong_Kong Asia/Hovd Asia/Irkutsk
 Asia/Jakarta Asia/Jayapura Asia/Jerusalem Asia/Kabul Asia/Kamchatka Asia/Karachi Asia/Kashgar
 Asia/Katmandu Asia/Krasnoyarsk Asia/Kuala_Lumpur Asia/Kuching Asia/Kuwait Asia/Macau
 Asia/Magadan Asia/Makassar Asia/Manila Asia/Muscat Asia/Nicosia Asia/Novosibirsk Asia/Omsk
 Asia/Oral Asia/Phnom_Penh Asia/Pontianak Asia/Pyongyang Asia/Qatar Asia/Qyzylorda
 Asia/Rangoon Asia/Riyadh Asia/Saigon Asia/Sakhalin Asia/Samarkand Asia/Seoul Asia/Shanghai
 Asia/Singapore Asia/Taipei Asia/Tashkent Asia/Tbilisi Asia/Tehran Asia/Thimphu Asia/Tokyo
 Asia/Ulaanbaatar Asia/Urumqi Asia/Vientiane Asia/Vladivostok Asia/Yakutsk Asia/Yekaterinburg
 Asia/Yerevan Atlantic/Azores Atlantic/Bermuda Atlantic/Canary Atlantic/Cape_Verde Atlantic/Faroe
 Atlantic/Jan_Mayen Atlantic/Madeira Atlantic/Reykjavik Atlantic/South_Georgia Atlantic/Stanley
 Atlantic/St_Helena Australia/Adelaide Australia/Brisbane Australia/Broken_Hill Australia/Currie
 Australia/Darwin Australia/Eucla Australia/Hobart Australia/Lindeman Australia/Lord_Howe
 Australia/Melbourne Australia/Perth Australia/Sydney Europe/Amsterdam Europe/Andorra
 Europe/Athens Europe/Belgrade Europe/Berlin Europe/Bratislava Europe/Brussels Europe/Bucharest
 Europe/Budapest Europe/Chisinau Europe/Copenhagen Europe/Dublin Europe/Gibraltar
 Europe/Guernsey Europe/Helsinki Europe/Isle_of_Man Europe/Istanbul Europe/Jersey
 Europe/Kaliningrad Europe/Kiev Europe/Lisbon Europe/Ljubljana Europe/London
 Europe/Luxembourg Europe/Madrid Europe/Malta Europe/Mariehamn Europe/Minsk Europe/Monaco
 Europe/Moscow Europe/Oslo Europe/Paris Europe/Podgorica Europe/Prague Europe/Riga
 Europe/Rome Europe/Samara Europe/San_Marino Europe/Sarajevo Europe/Simferopol Europe/Skopje
 Europe/Sofia Europe/Stockholm Europe/Tallinn Europe/Tirane Europe/Uzhgorod Europe/Vaduz
 Europe/Vatican Europe/Vienna Europe/Vilnius Europe/Volgograd Europe/Warsaw Europe/Zagreb

Europe/Zaporozhye Europe/Zurich Indian/Antananarivo Indian/Chagos Indian/Christmas Indian/Cocos Indian/Comoro Indian/Kerguelen Indian/Mahe Indian/Maldives Indian/Mauritius Indian/Mayotte Indian/Reunion Pacific/Apia Pacific/Auckland Pacific/Chatham Pacific/Easter Pacific/Efate Pacific/Enderbury Pacific/Fakaofu Pacific/Fiji Pacific/Funafuti Pacific/Galapagos Pacific/Gambier Pacific/Guadalcanal Pacific/Guam Pacific/Honolulu Pacific/Johnston Pacific/Kiritimati Pacific/Kosrae Pacific/Kwajalein Pacific/Majuro Pacific/Marquesas Pacific/Midway Pacific/Nauru Pacific/Niue Pacific/Norfolk Pacific/Noumea Pacific/Pago_Pago Pacific/Palau Pacific/Pitcairn Pacific/Ponape Pacific/Port_Moresby Pacific/Rarotonga Pacific/Saipan Pacific/Tahiti Pacific/Tarawa Pacific/Tongatapu Pacific/Truk Pacific/Wake Pacific/Wallis