Magrathea Telecom Number Translation Service (NTS) API

This document describes how to connect to and operate the NTS API.

Contents

Summary

This API allows approved customers of Magrathea to allocate and control numbering products where an individual number is given to an end user customer to use to receive calls. When calls are made to this number Magrathea will switch the call to its nominated destination number or service as specified when the number was allocated.

At the present time, the target for these numbers can be one of:
      a) a UK PSTN number
      b) an international PSTN number
      c) a generic voicemail to email service
      d) a facsimile to email service
      e) a VoIP SIP address
      f) an Asterisk IAX2 address

The API itself takes the form of a text-based TCP/IP API, similar in some respects to SMTP/POP3 etc. All commands are formed in textual ASCII and are responded to with a textual answer.

Each command issued will receive a reply, whether it was a query or an instruction. The first character of this reply indicates whether the command was successful and the rest of the reply is command specific.

A reply that begins with a '0' (zero) indicates success; a reply that begins with anything else (usually the numbers 1 to 9) indicates failure.

Connecting to the API

Connections to the NTS API can be made by anything capable of sending and receiving raw ASCII data.

Connections should be made on port 777 to the machine:
     api.magrathea-telecom.co.uk

Connecting from a Linux machine

If you have a Linux box, then you can use telnet from there and can initiate a session using the command:

```
telnet api.magrathea-telecom.co.uk 777
```

The same method of connection can be used from virtually all implementations of Unix.

Connecting from a Windows machine

Unfortunately, Windows telnet doesn't negotiate line mode with our interface and it therefore doesn't work.

If you need to use Windows then we would recommend you use PuTTY which is a free telnet client and can be downloaded from the author's website:

http://www.chiark.greenend.org.uk/~sgtatham/putty/

To make a connection using PuTTY, start the PuTTY client and at the configuration screen enter the following details:

Host Name: api.magrathea-telecom.co.uk
Protocol: Telnet
Port: 777

Once you have entered the connection details, you should select the 'Terminal' Category (on the left-hand side) and ensure that the '*Implicit CR in every LF* checkbox is ticked.

Other connections

It is possible to integrate API access with your website and/or back office systems by simply opening a socket connection and sending and receiving data as raw ASCII.

We have an example available that achieves this from a PHP script which can be easily modified and included with your website.

Example API Session

Here is an example session with the API.   For this example, we have made the connection from a Linux machine – the commands and responses when connected to the API are identical regardless of the connection type.

First we must connect to the API

```
> telnet api.magrathea-telecom.co.uk 777
Trying 213.166.5.75...
Connected to api.magrathea-telecom.co.uk.
Escape character is '^]'.
0 Magrathea NTS GW (ntsapi.c(V0.1) compiled on 13:53:53 Feb 16 2004)
```

As you can see, the API answers with a banner starting with '0' to show that the connection was successful.

Next we need to log on to the service.

Here, an invalid username and/or password is entered:

```
AUTH badname badpassword
2 Access denied
```

The '2 Access denied' reply has a non-zero first character which indicates that the authorisation command was not successful

```
AUTH xxxxx xxxxx
0 Access granted. Welcome (cl=1)
```

This time a valid username/password is entered, the zero first character of the reply indicates success!

Now we'll use a simple example where we ask for an 0871 number. When requesting numbers, the underscores are used to specify 'any' digit - if you have a specific request, you can try it!)

```
ALLO 0871504____
0 08715045378          Allocated
```

Our command was successful – for this command, the textual part of the reply message is important as it contains the ACTUAL number that was allocated!

Now we have a number we need to ensure that we keep it, so we must activate it

```
ACTI 08715045378
0 Number activated OK
```

If you do not issue an ACTI command after ALLOcating a number, you have not reserved that number and it could be allocated to someone else, so this command is extremely important.

Now the number has been allocated, so the system needs to be instructed on what to do when someone calls the number. The destination is defined using the SET command.

```
SET 08715045378 1 S:08715045378@sip1.mydomain.com
0 Number updated OK
```

This has set the number to be sent using SIP to the address *sip1.mydomain.com* further information on the addressing options for the SET command can be found at the end of this document.

The number is live now, so we just leave the API with:

```
QUIT
0 Many thanks. Goodbye
Connection closed by foreign host.
```

And we are done!

NTSAPI Command Reference

AUTH <username> <password>
This command must be issued before any other commands are processed.

QUIT
Terminates the session

ALLO <number>
Attempt to allocate a phone number. The <number> can either be an entire number, or may include underscores, to indicate any digit is acceptable.
ALLO and ALIST are the only commands that accepts underscores as part of the <number> parameter.

NOTE: This command does NOT reserve the number – you must issue an immediate ACTI command to ensure the number is allocated to your account and not available for allocation by others.

ACTI <number>
Activates a number obtained using the ALLO command. This command must be used to finalise the reservation process.

DEAC <number>
Deactivate the specified number. The number will no longer operate when dialled.
The exact number must be entered; underscores are not permitted when using this command.

```
DEAC 08715045378
0 Number deactivated OK
```

NOTE: If you deactivate a number it becomes available for others to allocate, so it cannot be guaranteed that you will be able to retrieve the number at a later date

REAC <number>
Reactivates a number that has previously been deactivated using the DEAC command (if it has not since been allocated by someone else).

STAT <number>

Query the current status of the specified number. A successful reply contains the information about the number's current settings. This is in the form:

0 <number> <status> <expiry> <target>

<status> can be Y for an active number or N for a deactivated number
<expiry> is the date the number expires and will become non-active
<target> contains one or more targets that will be used to deliver the call. Multiple targets are separated by a vertical bar '|' character.

SET <number> <index> <destination>

This command sets up destination for when the number is dialled.

The index allows setting of multiple destinations, which in combination with the ORDE command allows time based routing. If only one number is being set, then index should always be 1

The destination can be a variety of entries, depending on the type of service that is to be performed.

To perform basic number translations simply enter the number you wish to be used (you must use the full international version of the number):

```
SET 08715045378 1 441189999999
0 Number updated OK
```

NOTE: Even though you receive the 'Number updated OK' response you should ensure you check the number actually works. The API does not validate that target number is valid or reachable.

The tariff on your account may not allow calls to certain chargeable destinations, if the revenue from the incoming number is insufficient. For example, whilst you can set a UK geographic number to divert to a UK mobile phone in the NTSAPI, calls will not work because the mobile call is chargeable. If you wish to enable chargeable NTS diversions, please contact support for the costs involved.

For all of the following entries the CASE of the initial letter is important and in most cases the letter indicating the function required is UPPER CASE.

As mentioned above, you can run fax to email by quoting a destination of
For Fax to Email use
      F:<email address>

```
SET 08715045378 1 F:fax@mydomain.com
0 Number updated OK
```

For Voicemail (although a rather generic prompt at the moment) use

      V:<email address>

```
SET 08715045378 1 V:voicemail@mydomain.com
0 Number updated OK
```

NOTE: For both Fax to Email and Voicemail you may only enter a single email address. If you wish the faxes/voicemails to go to multiple recipients then a 'collector' address such as 'fax@mydomain.com' should be setup on your mailserver, which you can then address to as many individuals as required.

For calls routed using SIP you now have the ability to choose the method of DTMF signalling used for the call.

To route the call using SIP with RFC2833 DTMF

    S:username@sip.com

```
SET 08715045378 1 S:me@sip1.mydomain.com
0 Number updated OK
```

If you wish to route using SIP with inband DTMF then use a lower case 's' instead:

    s:username@sip.com

```
SET 08715045378 1 s:me@sip1.mydomain.com
0 Number updated OK
```

The 'username' portion of the SIP address can be anything you define, however Magrathea recommends that unless you have specific reasons to do otherwise that the phone number itself forms part of the address.

The SIP protocol does not include the dialled number anywhere else in the signalling, so if you have three numbers all sent to *user1@sip1.mydomain.com* then you cannot tell which number was dialled.

If you use exclusively UK numbering then a national number would be sufficient:

```
SET 08715045378 1 S:8715045378@sip1.mydomain.com
```

If you have a combination of numbers, then the full international format of the UK number will ensure a unique target:

```
SET 08715045378 1 S:448715045378@sip1.mydomain.com
```

To route the call using IAX2 (phone numbers are sent as extension number 44.......):

    I:username:password@iaxhost.com

```
SET 08715045378 1 I:username:password@iaxserver.mydomain.com

0 Number updated OK
```

NOTE: The IAX protocol includes the number dialled in its signalling so there is no need to include this in the target of the SET command

All changes to destination routing in the NTSAPI take place in real time and will be live as soon as you have received the `0 Number updated OK` message.

SPIN <number> [pin]

Set a PIN for the number.
The [pin] is optional – if no pin is provided then any existing pin on the number is removed.

FEAT <account> <feature> [1/0]

The FEAT command can be used to check, enable or disable a particular feature for an account.

Currently available features are:

'D' - when enabled presents the called number as the CLI (for example, so that the person receiving the call knows which number was dialled).

'J' – when enabled turns on Anonymous Call Rejection (ACR) for the number. ACR is operative if the caller deliberately withholds their number (with 141 or similar) – in this case the call does not go through and instead the originating network (eg BT) will play a message (eg 'This number does not accept anonymous calls'). ACR is not in effect if the caller ID does not exist, is international or the caller is unable to withhold their number.

Operationally within the API, usage is identical regardless of which feature is required.

To check the status of the feature:

```
FEAT 08700680068 D
0 Feature 'D' is Enabled
```

In the above case the person receiving the call that was made will see 08700680068 as the caller ID.

To set the feature, add a one(1) and to disable a zero(0)

```
FEAT 08700680068 D 0
0 Feature 'D' Disabled
```


'U' - may be used only when a PSTN divert is made to a non-UK destination to provide a UK ringtone (thus allowing the caller to remain unaware that the call has been forwarded overseas through masking of any 'odd' foreign ringtone).

This cannot be used for VoIP diverts as the terminating VoIP equipment should always generate the ringtone and failure to do so can cause problems with call answer detection.

To check the status of the feature:

```
FEAT 08700680068 U
0 Feature 'U' is Enabled
```

To set the feature, add a one(1) or zero(0)

```
FEAT 08700680068 U 0
0 Feature 'U' Disabled
```

ORDE <number> <target index> <list of periods by position>

This command sets the destination usage by time of day, allowing (for advanced NTS only) multiple targets to be setup and configuration when each target is active.

The <target index> relates directly to the <index> used in the SET command: the allowable values for this are 1, 2 or 3.

The <list of periods by position> item defines the order when a target is active and must contain four digits. The four digits each represent a different time period, so the field should be thought of as *DEWS* where D = daytime, E=evening, W = weekend, S=special (unused)

In each position, the numeric digit defines whether the target is active and in what order. The allowable entries are 0, 1 and 2 which enables you to set up to three destinations for each time period. A period '.' in any position indicates that number is never to be used during that time period.

When setting multiple destinations, the call will be initially passed to the destination that has a ZERO in that time period. If the call fails, or does not complete after 20 seconds, then the call will be passed to the destination that has a ONE in that time period. If that call also fails, or goes unanswered for 20 seconds then the destination with TWO in that time period will be called.

Each time period should only have ONE entry for each digit: you should not set both target 1 and target 2 to have a ZERO in the daytime as this will NOT result in both destinations ringing simultaneously – only the first will ring and the second will not be used at all.

To set target 1 as first choice at all times (this is the default behaviour)

```
ORDE 08715045378 1 0000
```

To set target 1 as first choice daytime, and second choice at all other times, with target 2 first choice for everything except daytime:

```
ORDE 08715045378 1 0111
ORDE 08715045378 2 1000
```

To set target 1 as only available during the week, and to use target 2 at the weekend:
```
ORDE 08715045378 1 00..
ORDE 08715045378 2 ..00
```

To return to the default behaviour where target 1 is first choice at all times and targets 2 and 3 are unused:

```
ORDE 08715045378 1 0000
ORDE 08715045378 2 ....
ORDE 08715045378 3 ....
```

ALIST <range> <size>

This command provides a selection of available numbers from the range requested to enable a choice of number allocated.

This operates in a similar way to the ALLO command, but rather than returning a single number, returns a random list of currently available numbers. If you require any of these numbers then you still need to ALLO/ACTI and SET the numbers in the normal way.

If the NTSAPI successfully finds the requested numbers, then multiple lines will be returned.

Each line will consist of a success response of the form "0 <number>" and this will continue until you receive a final response of "9 End" which concludes the list

```
ALIST 0845004 12
0 08450040040
0 08450042055
0 08450041091
0 08450041193
0 08450042433
0 08450041398
0 08450041716
0 08450041324
0 08450042509
0 08450040636
0 08450042104
0 08450041815
9 End
```

NOTE: NONE of the returned numbers are reserved for you and are available to other clients; therefore you should ALLO/ACTI any required numbers as soon as possible and SET them as normal.

INFO <number> <keyword> <text>

This command has been added to enable storage of information about the user of the number.

For standard (UK) numbers, the only keyword available is 'GEN' for general information.

The <text> portion is a freeform text field of up to 80 characters in which relevant information can be stored which has been requested from you by Magrathea to enable us to comply with certain statutory obligations.

```
INFO 08700680068 GEN Magrathea, 5 Commerce Park RG7 4AB
0 Information updated
```

For International numbers, the only keyword available is 'INT' to store the address information (which may be required due to local regulations).

The <text> portion is a freeform text field of up to 80 characters which should be used to store the local, in country address of the user which may be required to enable Magrathea to comply with certain statutory obligations.

```
INFO +35361532089 INT Magrathea, A Road, Limerick
0 Information updated
```

Commands to manage blocks of numbers

The allocation and de-allocation of contiguous blocks of numbers through the API can now be performed as a single operation.

The following commands are specific to blocks and you will be unable to use the standard ACTI/DEAC/REAC commands on any number within a block – commands which activate, deactivate or reactivate must be done on the block as a whole.

Please note that this means that any given block is to be treated as an entire DDI range and each block should therefore only be allocated to a single end-user. You should not sub-allocate parts of blocks which were allocated using the BLKACTI command to multiple users as requests to deactivate part of a block will not be supported and any portability requests on part of a block will be refused.

However, all other commands are usable on these numbers, so once allocated you are able to use the other commands to manage the numbers, for example to SET the targets and query the status using STAT.

BLKACTI <range> <size>

This command will search the specified number range and attempt to allocate a block of numbers of the requested size to your account.

The response to this command is the standard API success code of zero, followed by the first and last numbers in the block.

```
BLKACTI 0845004 5
0 08450040040 08450040044
```

Unlike the ALLO and ALIST commands, BLKACTI performs the equivalent of an ACTIvate on all numbers in the block, so you do not need to ACTI them separately.

Once you have allocated the numbers, you can then continue to issue the SET command on each to define its target to complete the setup.

Please note that because blocks of numbers may be spread throughout our allocated ranges, the block returned may not match a very specific request. The block commands differ from ALLO in that the range you request will be automatically modified by the NTSAPI to find the closest matching block.

BLKINFO <number>

This command can be used to determine if the number given is part of a block. If it is a number within a block then the first number and size of the block are returned.

```
BLKINFO 08450040044
0 08450040040 5
```

BLKDEAC <number>

This command can be used to deactivate and return a block of numbers. You must pass in the first number of the block.

```
BLKDEAC 08450040040
0 Block DEACtivated OK
```

BLKREAC <number>

If you have deactivated a block, then you may try to reactivate it, subject to no numbers in the block having been reallocated to other clients

```
BLKREAC 08450040040
0 Block REACtivated OK
```

Ported Numbers

It is also possible to control numbers that have been ported to Magrathea, if your NTSAPI account has been given permission to do so.

If you would like this functionality enabled on your account, please contact support.

To control a ported number you should replace the initial zero of a number with a 'P'. The *only* commands that can be issued against a ported number are SET, ORDE and STAT (plus, if enabled for 999 data submissions, the INFO command). All other commands will fail.

As an example, if you had ported the number 0871 504 5378 to Magrathea and have had your API account enabled for Ported number control then you can use the following commands:

```
SET P8715045378 1 S:me@sip1.mydomain.com
ORDE P8715045378 1 0000
STAT P8715045378
```

International Numbers

It is now possible to control some non-UK numbering from within the NTSAPI.

All international numbers need to be addressed in full E164 format with a leading plus sign (+) and the country code. Please note that this does not apply to ITFS numbers where Magrathea have provided you with an 'outpulse' number which differs from the in-country number which would be dialled.

At present, most Irish numbers provided by Magrathea are available to control as you would for normal UK numbers. For example a Limerick number 061532901 would be entered into all NTSAPI commands as +35361532901

The following commands are available for use with international numbers (the range of commands available will be added to once we have completed further work on integrating overseas numbers into our network):

```
ALLO
ACTI
SET
ORDE
STAT
DEAC
REAC
INFO
```

The following is an example NTSAPI session, showing how to allocate, activate and set a number in the Limerick area of Ireland:

```
AUTH xxxxx xxxxx
0 Access granted. Welcome (cl=1)
ALLO +35361532___
0 +35361532089        Allocated
ACTI +35361532089
0 Number activated OK
SET +35361532089 1 441189999999
0 Number updated OK
```

As you can see, the commands used are identical for those used with UK numbering and the only difference is the use of +353 at the start of the number

Only clients who have completed the required contracts for overseas numbering will be able to access numbers through the NTSAPI and your NTSAPI login must be specifically enabled to allow access to international numbers.

For example, the following 'not authorised' response shows you have not been granted access to international numbering:

```
ALLO +35361532___
9 You are not authorised to allocate that number
```

If you receive an authorisation failure when attempting to control numbers, then please contact support for further information.

Secure RTP

The Secure RTP product allows for both the voice and signalling traffic associated with a telephone call to be protected from interception and monitoring through the use of TLS to protect the SIP signalling and SRTP to provide encryption of the audio RTP traffic.

Support for secure voice on our inbound numbering service is enabled by the use of E: as a destination in the NTSAPI, for example E:me@sip1.mydomain.com.

Please note that we will only support nodes that have been through our initial set up and test process, therefore we discourage your use of this feature until that process is complete.

SET <number> <index> <destination>

To route the call using TLS/SRTP use an upper case 'E':

SET 08715045378 1 E:08715045378@sip1.mydomain.com

0 Number updated OK

To restore the number back to unencrypted routing (ie S: or s: routing) you can re-SET at any time using the SET < number> <index> <destination> command.