

United Kingdom Numbering Plan for CallManager

Document ID: 45704

Introduction

Prerequisites

- Requirements
- Components Used
- Conventions

Installation

UKNP Activation

- Route Filter for Basic Access
- Local Access

Partition Use

National Toll Bypass

- Extended National Toll Bypass

Number Blocking

Interdigit Timeouts

Troubleshoot

Appendix A – UK PSTN Numbering Overview

Appendix B – Filter Categories

- Tag Combinations

Appendix C – Digit Discard Instructions

Appendix D – Five-digit Subscriber Numbers

NetPro Discussion Forums – Featured Conversations

Related Information

Introduction

This document provides information about how to install and configure the United Kingdom Numbering Plan (UKNP).

Prerequisites

Requirements

Readers of this document should have knowledge of Cisco CallManager route patterns and dial plans.

Components Used

The information in this document is based on Cisco CallManager 3.3(4), 4.0(1), and later.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Installation

Follow these steps to install the UKNP on the Cisco CallManager Publisher and on all Subscribers:

1. Download the latest International Dial Plan for Great Britain from International Dial Plan Software Downloads.
2. Run the installation file on the Publisher Call Manager.

Follow the instructions.

3. Restart the Cisco CallManager service.

This allows the changes made by the installation file to take effect.

4. Run the installation on all Subscribers.

UKNP Activation

To activate the UK Numbering Plan, add a route pattern with the @ symbol in it. Make sure that you select **UKNP (United Kingdom Numbering Plan)** and not the NANP (North American Numbering Plan).

Route Pattern	Partition	Description	Route Filter	Gateway
9.@	PSTN	UKNP		10.48.79.13

This allows full access the UK public switched telephone network (PSTN). All valid UK numbers can be dialed without restriction. However, restrictions can be applied using Route Filters, which is detailed in the next section (Route Filter for Basic Access).

Route Filter for Basic Access

In most systems, it is usually desirable to block calls to some numbers (premium rate, directory services, and so forth). Most categories of numbers can be blocked in a route filter. See Appendix B – Filter Categories for all categories.

1. Add a new route filter and select the United Kingdom Numbering Plan.
2. Enter a name for the filter.
3. Change the filter category settings to DOES-NOT-EXIST for categories to which you want to block access.

Leave others at NOT-SELECTED.

```
(PREMIUM-RATE-NUMBER DOES-NOT-EXIST AND  
DIRECTORY-SERVICE DOES-NOT-EXIST AND  
INTERNATIONAL-ACCESS DOES-NOT-EXIST)
```

This example will block calls to numbers that start with 090 and 091, 118XXX directory services, and international numbers.

4. Apply the route filter to the route pattern.

In this example, with a 9.@ route pattern, a user that dials 9091, 9118, or 900 hears a number unobtainable tone.

Local Access

In the UK, local subscriber numbers can be 5, 6, 7, or 8 digits long, which depends on the area code. The UKNP contains four route patterns that overlap, for local access:

Number	Route Pattern
LOCAL-5-DIGIT	[2-9]XXXX
LOCAL-6-DIGIT	[2-9]XXXXXX
LOCAL-7-DIGIT	[2-9]XXXXXXXX
LOCAL-8-DIGIT	[2-9]XXXXXXXXXX

You must modify the route filter so that only the required local subscriber route pattern or patterns are selected. If not, you might get interdigit timeouts when you dial local numbers and service codes.

For example, a gateway in a 2-digit area code with 8-digit subscribers has this filter:

```
(LOCAL-5-DIGIT DOES-NOT-EXIST AND
LOCAL-6-DIGIT DOES-NOT-EXIST AND
LOCAL-7-DIGIT DOES-NOT-EXIST)
```

If you have gateways in different area codes, then use a route pattern and appropriate filter for each gateway.

For areas with mixed 5-digit and 6-digit subscribers, a more complex filter is needed to avoid interdigit timeouts. For example, Bodmin has 5-digit subscribers in the range 72XXX to 79XXX, but the rest of the area is 6-digit. Therefore, it has this filter:

Route Pattern	Partition	Route Filter
9.@	Local	(LOCAL-6-DIGIT == [2-689]XXXXX) OR (LOCAL-6-DIGIT == 7[01]XXXX) OR (LOCAL-5-DIGIT == 7[2-9]XXX)

The OR statements appear when you add a new Clause to the filter. See Appendix D – Five-digit Subscriber Numbers for lists of area codes with 5-digit subscribers.

Partition Use

For more complicated systems, you can split the dial plan up into various partitions with the use of route patterns and route filters, as desired:

Route Pattern	Partition	Route Filter
9.@	Local	(LOCAL-6-DIGIT EXISTS)
9.@	International	(INTERNATIONAL-ACCESS EXISTS AND COUNTRY-CODE EXISTS AND NATIONAL-NUMBER EXISTS)
9.@	Premium	(NATIONAL-ACCESS EXISTS AND PREMIUM-RATE EXISTS)
9.@	National	(NATIONAL-ACCESS EXISTS AND AREA-CODE EXISTS AND

		SUBSCRIBER EXISTS)
9.@	Mobile	(NATIONAL-ACCESS EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS)
9.@	Services	(SERVICE EXISTS AND DIRECTORY-SERVICE EXISTS)
&and so forth.		

Partitions can then be assigned to Calling Search Spaces as normal. See Appendix B – Filter Categories for valid Tag Combinations.

National Toll Bypass

To use this numbering plan in a National Toll Bypass configuration, set up a route filter to filter desired area codes. For example, calls from the London office to the Reading area can be routed as local calls through a gateway in the Reading office:

Route Pattern	Partition	Route Filter	Gateway
9.@	TollBypass	(AREA-CODE == 118)	Rdg-GW

If you want, you can set the Digit Discard Instructions (DDIs) to one that specifies Nat->Local. This removes the leading 0 and the area code.

Extended National Toll Bypass

Suppose you want to take advantage of the fact that calls from one area to neighboring areas are charged at the local rate rather than the national rate. (British Telecom [BT] only, other operators might charge differently.)

For example, calls from Reading (118) to Nettlebed (1491), Maidenhead (1628), Ascot (1276), Bracknell (1344), Aldershot (1252), Basingstoke (1256) and Newbury (1635) are charged at the local rate. Therefore, you can route calls for all of these areas out of the Reading gateway and only be charged the local rate:

Route Pattern	Partition	Route Filter	Gateway
9.@	TollBypass	(AREA-CODE == 118) OR (AREA-CODE ==1491) OR (AREA-CODE ==1628) OR (AREA-CODE ==1276) OR (AREA-CODE ==1344) OR (AREA-CODE ==1252) OR (AREA-CODE ==1256) OR (AREA-CODE ==1635)	Rdg-GW

The OR statements appear when you add a new Clause to the filter.

Tip: Refer to the BT site for details of neighboring areas.

Note: You can not remove the area code and leading 0 for these extra areas, so leave the Digit Discard Instructions as just Pre-Dot or none.

Number Blocking

You can use a route filter to block certain numbers.

Set up a route pattern and route filter that specifies a particular number, or use wildcards to block ranges of numbers:

Route Pattern	Partition	Route Filter
9.@	Blocked	(AREA-CODE == 20) AND (SUBSCRIBER == 88244000)
9.@	Blocked	(MOBILE-ACCESS == 7973) AND (MOBILE-SUBSCRIBER == 83XXXX)

Click the **Block this Pattern** radio button on the Route Pattern page.

Interdigit Timeouts

Dial plans that overlap cause interdigit timeouts, which are the amount of time that CallManager waits for additional key presses before it decides that the user has finished dialing the number and routes the call. The default timeout is 15 seconds, which can be quite noticeable.

The UKNP tried to remove as many interdigit timeouts as possible.

- In the geographical numbering ranges, this has been programmed into the plan.
- For local access, a filter that specifies the local dialing length is needed (see the Local Access section).
- Some 0800 Freephone numbers are 10 digits and some are 11 digits. It is impractical to program so many variations into the dial plan, so interdigit timeouts exist in this range.
- On international calls, except to North America (country code 1), there will still be interdigit timeouts.

These are recommendations to reduce the impact of interdigit timeouts:

- Reduce Service Parameter T302 from 15 seconds to around 5 seconds.
- Train users to press # after they dial the number, because the plan allows for this and # immediately cancels the T302 timer.

Troubleshoot

You can use these tips to help troubleshoot route pattern and route filter issues with the UKNP:

- Turn Cisco CallManager tracing up to Detailed, so that Digit Analysis is visible.
- Use the Dialed Number Analyzer which you must install from the Plug-ins menu to show pattern matching.

Appendix A – UK PSTN Numbering Overview

The UK PSTN does not have a uniform structure like the NANP. Area codes can be 2, 3, 4, or 5 digits; subscriber numbers can be 5, 6, 7, or 8 digits; and service codes can be 3, 4, 5, or 6 digits. National numbers can be 10 or 11 digits (including the leading 0).

Note: The leading 0 is not considered part of the area code, although it is commonly written that way.

These are the rules for geographic numbers:

- 2–digit area codes have 8–digit subscribers.
- 3–digit area codes have 7–digit subscribers.
- 4–digit area codes have 6–digit subscribers.
- Some 4–digit area codes have both 5– and 6–digit subscribers.
- 5–digit area codes have 5–digit subscribers.
- Some 5–digit area codes overlap with 4–digit area codes.

Access

Area Code

Subscriber

Place

0

20

XXXXXXXXXX

London

0

23

XXXXXXXXXX

Portsmouth/Southampton

0

118

XXXXXXX

Reading

0

161

XXXXXXX

Manchester

0

1253

XXXXXXX

Blackpool

0

1208

XXXXXX

Bodmin 6–digit

0

1208

XXXXX

Bodmin 5–digit

0

1539

XXXXXX

Kendal

0

15396

XXXXX

Sedburgh

As previously stated, national numbers have either 10 or 11 digits (including the leading 0); they are in the format 0SABCXXXXXX.

Access

SABC

Type

Length

0

500

Freephone

10

0

55X

58X

Corporate

11

0

56X

VoIP

11

0

70X

Personal

11

0

76X

Pagers

11

0

77X

78X

79X

Mobiles

11

0

800

Freephone

10 or 11

0

808

Freephone

11

0

82X

Schools Internet

11

0

844

845

Local Rate

11

0

870

871

National Rate

11

0

89X

Routing codes

11

0

90X

91X

Premium Rate

11

0

92X–99X

Broadband

11

There are also two 8–digit short numbers:

- Childline 8001111 (Freephone)
- NHS Direct 8454647 (local rate)

Service Codes

Services

100

Operator

999

Emergency

1XX

Services

18XX

Services

118XXX

Directory Services

Appendix B – Filter Categories

Category	Numbers*	Example
NATIONAL-ACCESS	Always 0	
AREA-CODE	2, 3, 4, or 5 digits	20, 161, 1208
SUBSCRIBER	5, 6, 7, or 8 digits	
INTERNATIONAL-ACCESS	Always 00	
COUNTRY-CODE	1, 2, or 3 digits	1, 32, 353
NATIONAL-NUMBER	> 3 digits	
SERVICE	3 or 4 digits	144
DIRECTORY-SERVICE	6 digits	118118
FREEPHONE-NUMBER	9 or 10 digits	800123456

CORPORATE-NUMBER	10 digits	5511334455
MOBILE-ACCESS	4 digits	7973
MOBILE-SUBSCRIBER	6 digits	234567
PAGING-ACCESS	4 digits	7601
PAGING-SUBSCRIBER	6 digits	234567
PERSONAL-ACCESS	Always 70	
PERSONAL-SUBSCRIBER	8 digits	8765432
LOCAL-RATE-ACCESS	844 or 845	
LOCAL-RATE-SUBSCRIBER	7 digits	7766554
NATIONAL-RATE-ACCESS	870 or 871	
NATIONAL-RATE-SUBSCRIBER	7 digits	1112223
PREMIUM-RATE-NUMBER	10 digits	9008765432
BROADBAND-SERVICE	10 digits	9223456789
SPECIAL-RATE-ACCESS	3 digits	820
SPECIAL-RATE-SUBSCRIBER	7 digits	1234567
LOCAL-5-DIGIT	5 digits	
VOIP-NUMBER	10 digits	5601234567
LOCAL-6-DIGIT	6 digits	
LOCAL-7-DIGIT	7 digits	
LOCAL-8-DIGIT	8 digits	

* Number lengths do not include the leading 0 for national numbers.

Tag Combinations

INTERNATIONAL-ACCESS : COUNTRY-CODE : NATIONAL-NUMBER
INTERNATIONAL-ACCESS : COUNTRY-CODE : NATIONAL-NUMBER : END-OF-DIALING
NATIONAL-ACCESS : AREA-CODE : SUBSCRIBER
NATIONAL-ACCESS : MOBILE-ACCESS : MOBILE-SUBSCRIBER
NATIONAL-ACCESS : FREEPHONE-NUMBER
NATIONAL-ACCESS : FREEPHONE-NUMBER : END-OF-DIALING
NATIONAL-ACCESS : LOCAL-RATE-ACCESS : LOCAL-RATE-SUBSCRIBER
NATIONAL-ACCESS : CORPORATE-NUMBER
NATIONAL-ACCESS : BROADBAND-SERVICE
NATIONAL-ACCESS : PAGING-ACCESS : PAGING-SUBSCRIBER
NATIONAL-ACCESS : PREMIUM-RATE-NUMBER
NATIONAL-ACCESS : NATIONAL-RATE-ACCESS : NATIONAL-RATE-SUBSCRIBER
NATIONAL-ACCESS : SPECIAL-RATE-ACCESS : SPECIAL-RATE-SUBSCRIBER
NATIONAL-ACCESS : PERSONAL-ACCESS : PERSONAL-SUBSCRIBER
NATIONAL-ACCESS : VOIP-NUMBER
SERVICE
DIRECTORY-SERVICE
LOCAL-5-DIGIT
LOCAL-6-DIGIT
LOCAL-7-DIGIT
LOCAL-8-DIGIT

Appendix C – Digit Discard Instructions

DDI

Operation

Example

Nat->Local

Removes leading 0 and area code for geographic numbers.

01752808080 becomes 808080

Nat->Internat

Removes leading 0 for geographic numbers.

01752808080 becomes 1752808080

Internat->Nat

Removes international access and country code.

003227045900 becomes 27045900

Mobile->Internat

Removes leading 0 for mobile numbers.

07973876543 becomes 7973876543

InternatDirectDial

Removes international access code only.

003227045000 becomes 3227045000

DDI

Operation

Pre-Dot

Removes anything before the dot.

Pre-At

Removes anything before the @.

Trailing-#

Removes trailing #.

Note: When you apply an inappropriate DDI, called numbers are truncated. For example, when you apply Nat->Local to a Freephone number.

Appendix D – Five-digit Subscriber Numbers

Location

Area Codes

Dumfries

13873

Hornby

15242

Kendal

15394

15395

15396

Wigton

16973

16974

Penrith

17683

17684

17687

Gosforth

19467

Location

Area Codes

5-digit Subscriber Number Ranges

Ascot

1276

2XXXX

3[1-8]XXX

6[1-6]XXX

Lancaster

1524

3[2-79]XXX

6XXXX

Tamworth

1827

[56]XXXX

Bolton

1204

6[1-4]XXX

Bodmin

1208

7[2-9]XXX

Blackburn

1254

5[1-79]XXX

Axminster

1297

2[0-4]XXX

3[2-5]XXX

Buxton

1298

2[2-7]XXX

7[0-47-9]XXX

8[3-5]XXX

Forfar

1307

8[2-4]XXX

Crediton

1363

8[2-5]XXX

Ashburton

1364

7[23]XXX

Dudley

1384

7[04-9]XXX

Evesham

1386

4[0157-9]XXX

Honiton

1404

4[1-7]XXX

Alton

1420

2[23]XXX

8[02-9]XXX

Chard

1460

30XXX

6[1-8]XXX

5[2-57]XXX

7[2-8]XXX

Annan

1461

40XXX

Huntingdon

1480

52XXX

Great Shefford

1488

7[1-3]XXX

Redditch

1527

6XXXX

Kircudbright

1557

50XXX

Stourbridge

1562

6[06-9]XXX

Launceston

1566

86XXX

Northwich

1606

4XXXX

7[4-79]XXX

Matlock

1629

5[5-7]XXX

Newbury

1635

[34]XXXX

Moretonhampstead

1647

24XXX

61XXX

Sanquhar

1659

5[08]XXX

6[67]XXX

74XXX

Skelmersdale

1695

5[0-4]XXX

Wigton

1697

7[23]XXX

St. Austell

1726

6[13-7]XXX

7[0-7]XXX

Rainford

1744

2XXXX

Selkirk

1750

2[0-3]XXX

[3-68]2XXXX

76XXX

Okehampton

1837

5[2-5]XXX

8[239]XXX

Tiverton

1884

3[2-58]XXX

Workington

1900

6[1-8]XXX

85XXX

Worcester

1905

2XXXX

Yeovil

1935

83XXX

Whitehaven

1946

6[1-8]XXX

Whatton

1949

2[01]XXX

81XXX

Templecombe

1963

23XXX

3[1-4]XXX

Garstang

1995

61XXX

NetPro Discussion Forums – Featured Conversations

Networking Professionals Connection is a forum for networking professionals to share questions, suggestions, and information about networking solutions, products, and technologies. The featured links are some of the most recent conversations available in this technology.

NetPro Discussion Forums – Featured Conversations for Voice
Service Providers: Voice over IP
Voice & Video: Voice over IP
Voice & Video: IP Telephony
Voice & Video: IP Phone Services for End Users
Voice & Video: Unified Communications
Voice & Video: IP Phone Services for Developers
Voice & Video: General

Related Information

- [Ofcom , the UK Media regulator](#)
- [UK Phone Information](#)
- [Cisco CallManager International Dial Plan Deployment Guide](#)
- [International Dial Plan Software Downloads](#)
- [Route Filter Configuration](#)
- [Voice Technology Support](#)
- [Voice and IP Communications Product Support](#)
- [Recommended Reading: Troubleshooting Cisco IP Telephony](#)
- [Technical Support & Documentation – Cisco Systems](#)

