

# Policy for the Management and Administration of the Global Dialling Scheme in the UK

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## Introduction

This document sets out the policy for the allocation of E.164 numbers to support H.323 (IP) videoconferencing in the UK. A brief background is provided of the development of the chosen numbering scheme. The document then describes the numbering scheme, how prefixes are assigned and associated restrictions. Appendix 1 provides details of gatekeepers and the gatekeeper hierarchy in the UK, as well as giving examples of call routing.

## Background

In May 2001, the UKERNA<sup>1</sup> H.323 Architecture Group was formed. Its remit was to make recommendations about how to provide a consistent and usable central H.323 (IP) videoconferencing service. One area of focus was best practice for H.323 addressing, which had been identified by the “UKERNA Videoconferencing over IP” project as an area that needed to be resolved. It was vital that a viable solution was found to facilitate the successful operation of a videoconferencing service using IP and the H.323 standard.

The Architecture Group made specific policy recommendations in all areas of H.323 videoconferencing, and provided a roadmap for the development and deployment of an H.323 videoconferencing service to operate on JANET

After consultation between the Architecture Group (acting on behalf of UKERNA and other NRENs (National Research and Education Networks) in Europe and ViDeNet in the USA, agreement on a numbering scheme for H.323 addressing was reached. This was the GDS (Global Dialling Scheme), which is sometimes known as the ‘E.164 addressing scheme’. Since its inception in 2001, the GDS has been adopted by a growing number of NRENs and is used throughout the academic, research and schools communities in the UK and worldwide.

## UK Addressing Scheme Description

A number in the GDS has four main component elements:

- An international dialling prefix
- The ITU-T<sup>2</sup> country telephone code, which is between one and three digits
- A zone<sup>3</sup> prefix, which is five digits starting with a zero, for example 01900
- An endpoint extension number, which is usually three digits but can be up to eight digits in some cases<sup>4</sup>. The extension number should not begin with a zero

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<sup>1</sup> JANET (UK) known formerly as UKERNA

<sup>2</sup> The ITU (International Telecommunication Union) branch concerned with international standardisation of telecommunications.

<sup>3</sup> A zone is defined as the group of H.323 endpoints that are controlled by a single gatekeeper. The endpoints in the zone do not need to be on the same subnet and therefore can be geographically dispersed.

<sup>4</sup> For the majority of users of the GDS, three digits to specify an endpoint are considered sufficient. However for schools in England and Scotland, eight digits are used. For a detailed explanation see: <http://www.ja.net/documents/services/video/E164.pdf>

**Table 1: The four components that make up a GDS number**

International dialling prefix	Country code	Zone prefix	Endpoint extension number
00	44	01008	468

Held on directory gatekeepers<sup>5</sup>
 Held on both directory and organisation gatekeepers
  Held on organisation gatekeepers

The example in Table 1 provides an illustration of a UK videoconferencing endpoint address. In this instance the number is 0044 01008 468, where:

- 00 is the international dialling prefix;
- 44 is the code for the UK;
- 01008 is the zone in which the endpoint is registered;
- 468 is the endpoint extension number.

Within some countries' systems it may be necessary to dial an additional 'exit code' prefix, which is similar to dialling 9 for an outside line from an internal telephone system. This is not necessary in the UK. The managing entity of the national gatekeeper in the country concerned should be contacted if further information about the national policy of a particular country is required.

**Zone prefixes** are defined and administered by the national managing agent, usually the NREN in that country.

**Endpoint extension numbers** are assigned by local management authorities, for example:

- Organisations, such as Universities or FE (Further Education) Colleges
- RBCs (Regional Broadband Consortia)
- Local Authorities
- Commercial organisations
- Charities

The endpoint needs to be configured with the IP address of the local gatekeeper or the IP address of the JANET gatekeeper, depending on which is being used as the 'organisation gatekeeper'.

### Assignment of GDS Prefixes

JANET (UK) is the national managing agent for the GDS in the UK, and as such manages zone prefixes. Any local management authority of H.323 (IP) videoconferencing gatekeeper(s) and endpoint(s) can request a zone prefix from JANET (UK). Currently blocks of prefixes are assigned to different groups of users, for example:

**Table 2: Zone prefixes and groups of users currently assigned**

Zone Prefix	User group prefix available to
01XXX	HEIs, FECs and other organisations with a JANET primary connection
02XXX	Regional Broadband Consortia and Local Authorities
03XXX	Commercial organisations
05XXX	NHS

The day-to-day management of the JANET directory gatekeeper, and therefore the list of UK assigned GDS prefixes are delegated to the JANET Videoconferencing Service (JVCS), which is located at the University of Edinburgh.

<sup>5</sup>For an explanation of gatekeepers and their hierarchy, see Appendix 1

English schools have been pre-assigned GDS prefixes. A document detailing this assignment can be found at:

**<http://www.ja.net/documents/services/video/E164.pdf>**

### **Applying for a GDS Zone Prefix**

Information about how to register a gatekeeper to use the GDS, change details and return unwanted prefixes can be found at:

**<http://www.ja.net/documents/services/video/vtas/gkconfig.pdf>**

## Appendix 1

This appendix provides a brief overview of gatekeepers. More detailed information about gatekeeper policy and implementation is available at:

<http://www.ja.net/documents/services/video/vtas/gkconfig.pdf>

### Gatekeepers

A gatekeeper is a call setup and call management device, which allows network managers to control H.323 videoconferencing traffic on their networks. A gatekeeper administers a zone (or zones) and the endpoints registered therein, using admission control, bandwidth control, address translation and address resolution. Address translation and address resolution involve the mapping of GDS (E.164) addresses to the IP addresses of endpoints.

The distribution of gatekeepers and the zones they manage allows for a scalable service with devolved management. The deployment of gatekeepers should reflect the network topology and facilitate communication between gatekeepers in the UK gatekeeper hierarchy.

### Hierarchy of Gatekeepers

The GDS uses a hierarchy of gatekeepers to route call setup information between endpoints, locally, nationally and internationally.

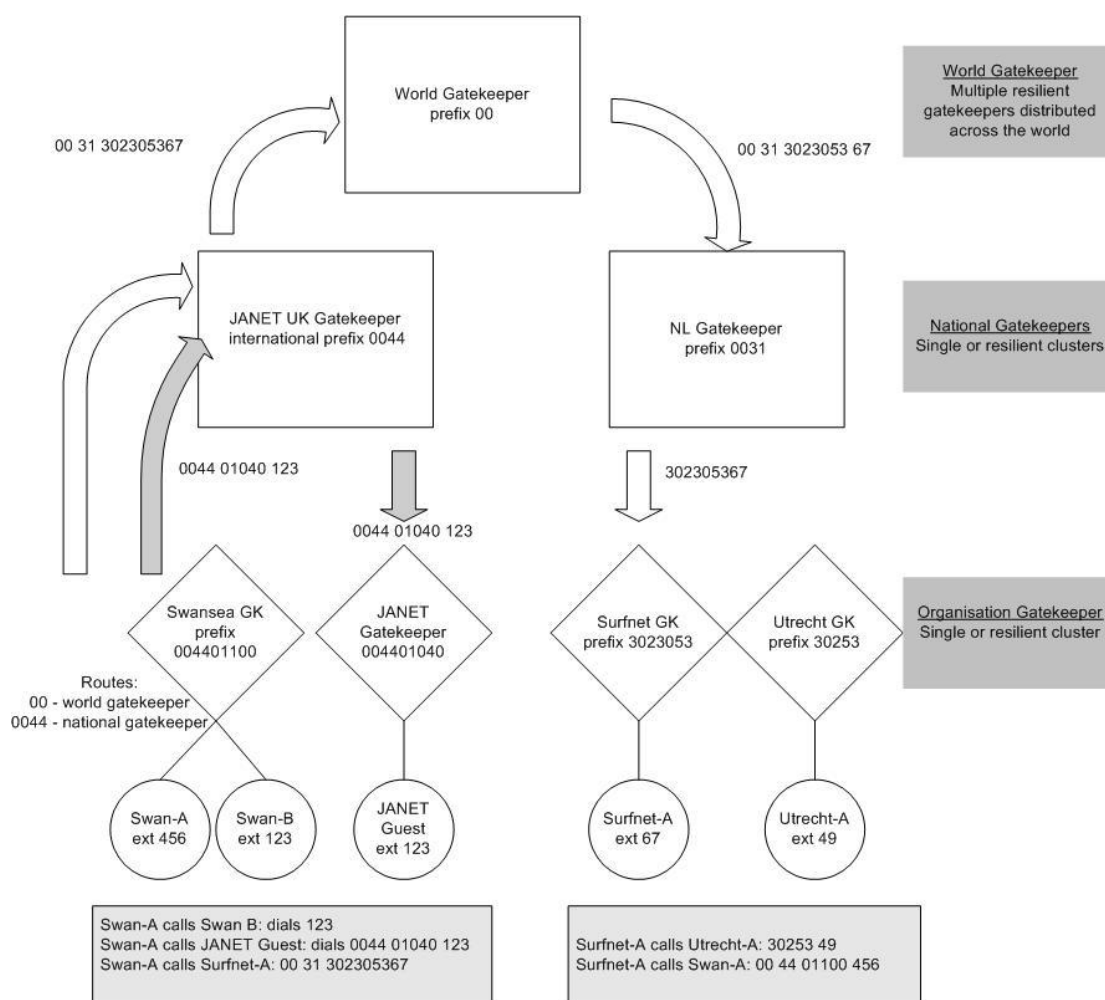
Each H.323 endpoint within an organisation (or zone) is registered with an **organisation gatekeeper**. The organisation gatekeeper performs call admission and call control functions. The organisation may also choose to control the level of H.323 traffic on its network.

**National gatekeepers** have knowledge of all zones within a country. **World gatekeepers** have knowledge of all national gatekeepers. National and world gatekeepers are known as **directory gatekeepers** as they do not perform address translation, only LRQ (Location Request) forwarding.

Figure 1 (page 5) is a graphical representation of the gatekeeper hierarchy. Use of the UK national gatekeeper can be seen when setting up a videoconference between endpoints in the UK. The world gatekeeper is used when setting up a videoconference between endpoints in different countries.

Table 3 (page 5) documents how the setup calls are routed through the hierarchy shown in Figure 1.

**Figure 1: Example of the hierarchy of gatekeepers**



NOTE: GK = Gatekeeper  
 The structure of SURFnet<sup>6</sup> E.164 numbers differs from the UK implementation

**Table 3: Example of making H.323 calls using the GDS and the gatekeeper hierarchy in Figure 1**

Details of call to be made	Number dialled	Routing through gatekeeper hierarchy
Swan-A calls Swan-B	123	Routes through Swansea organisation gatekeeper
Swan-A calls JANET( UK) Guest	0044 01040 123	Routes through Swansea organisation gatekeeper, JANET(UK) national Gatekeeper, and JANET(UK) organisation gatekeeper
Swan-A calls SURFnet-A	0031 30230 53 67	Routes through Swansea organisation gatekeeper, JANET(UK) national gatekeeper, world gatekeeper, NL national Gatekeeper and SURFnet organisation gatekeeper
SURFnet-A calls Utrecht-A	0031 30253 49	Routes through SURFnet organisation gatekeeper, NL national gatekeeper and Utrecht organisation gatekeeper
SURFnet-A calls Swan-A	0044 01100 456	Routes through SURFnet organisation gatekeeper, NL national gatekeeper, world gatekeeper, JANET(UK) national gatekeeper and Swansea organisation gatekeeper

<sup>6</sup> SURFnet is the NREN which defines and administers zone prefixes in the Netherlands

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