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**H.248.41**

**Amendment 1**  
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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS  
Infrastructure of audiovisual services – Communication  
procedures

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Gateway control protocol: IP domain connection  
package

**Amendment 1: IP realm availability package**

Recommendation ITU-T H.248.41 (2006) –  
Amendment 1

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# **Recommendation ITU-T H.248.41**

## **Gateway control protocol: IP domain connection package**

### **Amendment 1**

#### **IP realm availability package**

##### **Summary**

This Recommendation defines certain parameters and mechanisms for supporting the interconnection of a packet network with another network. It is only applicable to the IP-based H.248 termination and provides such information as the IP Realm Identifier used to indicate to which packet network the media represented by the termination belongs.

Amendment 1 introduces mechanisms that allow the media gateway controller to discover the IP realms that are available at the media gateway at a certain time. It also introduces a length limitation in the IP realm property.

##### **Source**

Amendment 1 to Recommendation ITU-T H.248.41 (2006) was approved on 13 June 2008 by ITU-T Study Group 16 (2005-2008) under Recommendation ITU-T A.8 procedure.

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# Recommendation ITU-T H.248.41

## Gateway control protocol: IP domain connection package

### Amendment 1

#### IP realm availability package

#### 1 Scope

This Recommendation defines packages ~~defines certain parameters~~ and mechanisms for supporting the interconnection of a packet network with another network. The packages defined by this Recommendation are ~~is~~ only applicable to IP-based H.248 terminations. The packages are ~~is~~ therefore applicable for:

- IP-to-IP H.248 media gateways, and
- IP-to-non-IP H.248 media gateways.

##### **1.1 Specifying the IP realm of an H.248 stream**

The MGC may specify the IP realm that a stream of a particular H.248 termination belongs to. This is accomplished through the IP Realm Identifier property of the IP Domain Connection package.

##### **1.2 Auditing the MG supported realms and their availability**

###### **1.2.1 Auditing all supported realms**

The MGC can audit the realms supported by the MG (i.e., all realms that the MG is aware of) by using an AuditCapabilities on the IP Realm Identifier property of the IP Domain Connection package.

###### **1.2.2 Understanding the availability of realms**

The IP Realm Availability package extends the IP Domain Connection package. Through an AuditValue of this package's Available Realms property, the MGC is able to learn which of the supported realms is currently available (i.e., over which realms the MG can currently send and receive traffic). Similarly, the MGC may request to be notified of changes to the list of available realms through the Available Realms Changed event of the same package.

#### 2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T H.248.1] Recommendation ITU-T H.248.1 (2005), *Gateway control protocol: Version 3*.

[IETF RFC 1123] IETF RFC 1123 (1989), *Requirements for Internet Hosts – Application and Support*.  
<<http://www.ietf.org/rfc/rfc1123.txt>>

[IETF RFC 2663] IETF RFC 2663 (1999), *IP Network Address Translator (NAT) Terminology and Considerations*.  
<<http://www.ietf.org/rfc/rfc2663.txt>>

### 3 Terms and definitions

This Recommendation defines the following terms:

**3.1 IP address realm or IP realm:** Is defined in [IETF RFC 2663], clause 2.1, as a network domain in which the network addresses are uniquely assigned to entities such that datagrams can be routed to them. Routing protocols used within the network domain are responsible for finding routes to entities given their network addresses.

**3.2 realm availability** (from MG perspective): Realm availability means connectivity on the IP layer to a particular realm. Connectivity implies that the MG joins the realm (i.e., network address(es) from that realm are used for H.248 IP stream/terminations) and that at least one IP route is available towards another IP node (e.g., IP router, IP host, H.248 media gateway) of that realm.

### 4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

IP Internet Protocol  
MG Media Gateway  
MGC Media Gateway Controller

### 5 IP Domain Connection Package

Package name: IP Domain Connection Package  
Package ID: ipdc (0x009d)  
Description: This package defines certain parameters and mechanisms for supporting the interconnection of a packet network with another network.  
Version: 1  
Extends: None

#### 5.1 Properties

##### 5.1.1 IP Realm Identifier

Property name: IP Realm Identifier  
Property ID: realm (0x0001)  
Description: This property is used to indicate to which packet network the media represented by the termination belongs.  
Type: String

Possible values: String

Length limitation: Where the IP Realm Identifier property uses a domain name format, it shall handle domain names of up to 63 characters and should handle domain names of up to 255 characters in accordance with clause 2.1 of [IETF RFC 1123].

Default: Provisioned between the MGC and the MG.

Defined in: LocalControl

Characteristics: read/write

## 5.2 Events

None.

## 5.3 Signals

None.

## 5.4 Statistics

None.

## 5.5 Error Codes

None.

## 5.6 Procedures

The value of the IP Realm Identifier property is a string, which may be in a domain name format, e.g., "mynet.net", or any other string format. In case the MGC uses an *ipdc/realm* property exceeding the above defined length limitation, the MG shall reply with an error descriptor using error code #449: "Unsupported or Unknown Parameter or Property Value".

The IP Realm Identifier should be provisioned between the MGC and the MG. Each of the different IP realms possibly interconnecting with an MG should have a different identifier. The MGC and the MG can provision a default IP realm and configure it on the MG. If the MGC sends a command to the MG to create an IP-based H.248 termination without the IP Realm Identifier property, the MG will consider it as indicating the default realm.

If the value of the IP Realm Identifier property sent by the MGC cannot be recognized by the MG, the MG will fail to create the IP-based H.248 termination and return the corresponding error code to the MGC, e.g., 449 (Unsupported or Unknown Parameter or Property Value).

Performing an AuditCapabilities of the *ipdc/realm* property on the root termination returns all realms defined in the MG, being available or not. Performing an AuditValue of the *ipdc/realm* property on an IP termination returns the IP realm that the termination is currently connected to.

## 6 IP Realm Availability Package

Package name: IP Realm Availability

Package ID: ipra (0x00e0)

Description: This package defines a new root property and a new root event to enable a discovery mechanism for IP realm availability.

Version: 1

Extends: ipdc (0x009d) Version 1

## **6.1 Properties**

### **6.1.1 Available Realms**

<u>Property name:</u>	<u>Available Realms</u>
<u>Property ID:</u>	<u>ar (0x0001)</u>
<u>Description:</u>	<u>This property lists the IP realms which are currently available for usage on request by the MGC. It is applicable on Root terminations only.</u>
<u>Type:</u>	<u>Sub-list of String</u>
<u>Possible values:</u>	<u>Strings mutually understood by MG and MGC and which are also addressable through the <i>ipdc/realm</i> property.</u>
<u>Default:</u>	<u>None</u>
<u>Defined in:</u>	<u>TerminationState</u>
<u>Characteristics:</u>	<u>ReadOnly</u>

## **6.2 Events**

### **6.2.1 Available Realms Changed**

<u>Event name:</u>	<u>Available Realms Changed</u>
<u>Event ID:</u>	<u>arc (0x0001)</u>
<u>Description:</u>	<u>This event indicates that the availability of realms in the MG has changed. It is applicable on Root terminations only.</u>

#### **6.2.1.1 EventsDescriptor parameters**

None.

#### **6.2.1.2 ObservedEventsDescriptor parameters**

##### **6.2.1.2.1 Newly Available Realms**

<u>Parameter name:</u>	<u>Newly Available Realms</u>
<u>Parameter ID:</u>	<u>nar (0x0001)</u>
<u>Description:</u>	<u>This parameter gives the list of realms that were previously unavailable and are now available.</u>
<u>Type:</u>	<u>Sub-list of String</u>
<u>Optional:</u>	<u>Yes</u>
<u>Possible values:</u>	<u>Strings mutually understood by MG and MGC and which are also addressable through the <i>ipdc/realm</i> property.</u>
<u>Default:</u>	<u>None</u>

##### **6.2.1.2.2 Newly Unavailable Realms**

<u>Parameter name:</u>	<u>Newly Unavailable Realms</u>
<u>Parameter ID:</u>	<u>nur (0x0002)</u>
<u>Description:</u>	<u>This parameter gives the list of realms that were previously available and are now unavailable.</u>
<u>Type:</u>	<u>Sub-list of String</u>

<u>Optional:</u>	<u>Yes</u>
<u>Possible values:</u>	<u>Strings mutually understood by MG and MGC and which are also addressable through the <i>ipdc/realm</i> property.</u>
<u>Default:</u>	<u>None</u>

### **6.3 Signals**

None.

### **6.4 Statistics**

None.

### **6.5 Error Codes**

None.

### **6.6 Procedures**

#### **6.6.1 Auditing available realms**

For MGs supporting the package, an MGC can discover the available realms in an MG by auditing the root property "Available realms" (*ipra/ar*) with the AuditValue command. The audit can be performed after Control Association (re-)establishment and provides the information about available realms.

An MGC that wishes to discover all realms defined in the MG should perform an AuditCapabilities of the *ipdc/realm* property on the root termination. An AuditCapabilities of the *ipra/ar* property should be avoided since in theory it would return all possible subsets of the set of realms defined in the MG, as each subset is a possible value of the *ipra/ar* property. An MG receiving an AuditCapabilities command on the *ipra/ar* property may send an error reply, e.g., 501 "Not implemented".

#### **6.6.2 Notification of realm changes**

To enable an MG to inform an MGC about changes to the set of available realms, the MGC may arm the "Available Realms Changed" event (*ipra/arc*) on root. This allows the MG to dynamically inform the MGC about changes which occur in the set of available realms, e.g., due to management actions or network interruptions.

Each "Available Realms Changed" notification may include two ObservedEvents parameters:

- "Newly Available Realms", which lists the realms that have become available.
- "Newly Unavailable Realms", which lists the realms that have become unavailable.

Each of these parameters may be omitted only if the relevant list is empty (hence, an *ipra/arc* notification must always include at least one parameter). The change reported by these two lists relates to the realms' availability at the time of the last *ipra/arc* notification or the time when the *ipra/arc* event was last armed (whichever is later).

The MGC must know the realms initially available in order for it to make use of the information provided by the *ipra/arc* event. A possible way of doing so is by auditing the current value of the *ipra/ar* property using the same Modify request that arms the *ipra/arc* event.





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