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**SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS**

Data over Transport – Generic aspects – Transport
network control aspects

**SERIES Y: GLOBAL INFORMATION
INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS
AND NEXT-GENERATION NETWORKS**

Internet protocol aspects – Operation, administration and
maintenance

Generalized automatic discovery for transport entities

ITU-T Recommendation G.7714/Y.1705

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ITU-T Recommendation G.7714/Y.1705

Generalized automatic discovery for transport entities

Summary

This Recommendation describes the discovery process for transport entities, their sub-processes and basic interactions in a protocol-neutral manner.

Source

ITU-T Recommendation G.7714/Y.1705 was approved on 22 August 2005 by ITU-T Study Group 15 (2005-2008) under the ITU-T Recommendation A.8 procedure.

Keywords

Auto-discovery, discovery agent, layer adjacency discovery, transport capability exchange.

FOREWORD

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ITU-T Recommendation G.7714/Y.1705

Generalized automatic discovery for transport entities

1 Scope

This Recommendation describes the discovery process for transport entities (Link Connection, Trail and Network Connection). Their sub-processes and basic interactions within the Discovery process are described in a protocol-neutral manner. Other aspects of discovery, such as further specification of mechanisms, protocols and how discovery may be used by applications, is outside the scope of this Recommendation. This version of ITU-T Rec. G.7714/Y.1705 allows the discovery process to be used by the Management Plane as well as the Control Plane¹.

In this Recommendation, the Discovery Agent is broken down into the following discovery processes:

- a) Discovery Trigger;
- b) Layer Adjacency Discovery;
- c) Transport Entity Capability Exchange.

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 Recommendation G.805 (2000), *Generic functional architecture of transport networks*.
- ITU-T Recommendation G.806 (2004), *Characteristics of transport equipment – Description methodology and generic functionality*.
- ITU-T Recommendation G.852.2 (1999), *Enterprise viewpoint description of transport network resource model*.
- ITU-T Recommendation G.853.1 (1999), *Common elements of the information viewpoint for the management of a transport network*.
- ITU-T Recommendation M.3100 (2005), *Generic network information model*.
- ITU-T Recommendation G.8080/Y.1304 (2001), *Architecture for the automatically switched optical network (ASON)*, plus Amendment 2 (2005).

¹ The 2001 version of ITU-T Rec. G.7714/Y.1705 assumed discovery was limited to use by the Control Plane.

3 Terms and definitions

This Recommendation makes use of the following terms defined in other ITU-T Recommendations.

- 3.1 Access Point (AP):** See ITU-T Rec. G.805.
- 3.2 Connection Termination Point (CTP):** See ITU-T Rec. M.3100.
- 3.3 continuity supervision:** See ITU-T Rec. G.806.
- 3.4 Discovery Agent (DA):** See ITU-T Rec. G.8080/Y.1304.
- 3.5 link:** See ITU-T Recs G.852.2 and G.853.1.
- 3.6 link connection:** See ITU-T Rec. G.805.
- 3.7 network connection:** See ITU-T Rec. G.805.
- 3.8 Subnetwork Point (SNP):** See ITU-T Rec. G.8080/Y.1304.
- 3.9 trail:** See ITU-T Rec. G.805.
- 3.10 Trail Termination Point (TTP):** See ITU-T Rec. M.3100.

4 Abbreviations

This Recommendation uses the following abbreviations:

AP	Access Point
CI	Characteristic Information
CP	Connection Point
CTP	Connection Termination Point
DA	Discovery Agent
DCN	Data Communication Network
DT	Discovery Trigger
ID	Identifier
LAD	Layer Adjacency Discovery
LC	Link Connection
LCP	Link Control Protocol
LRM	Link Resource Manager
MS	Multiplexing Section
NC	Network Connection
NE	Network Element
PPP	Point-to-Point Protocol
RS	Regenerator Section
Rx	Receive
SNP	Subnetwork Point
TAP	Termination and Adaptation Performer
TCE	Transport Entity Capability Exchange
TCP	Termination Connection Point

TTP	Trail Termination Point
Tx	Transmit
VC	Virtual Container

5 Conventions

In this Recommendation the notation "R-n" is used to identify requirements.

The notation (T)CP is used to represent a TCP or a CP.

6 Discovery process overview

The overall discovery process for transport entities is illustrated in Figure 6-1. It is a generic process that is applicable to any layer of multilayer networks as described in ITU-T Rec. G.805.

There is no proscribed location or distribution for the entities that support the discovery process (e.g., management systems, NEs, etc.). It shall be possible for the Management Plane to enable and disable the discovery process and individual sub-processes that will be discussed in subsequent clauses.

As shown in Figure 6-1, the discovery process is documented for the three sub-processes: Discovery Trigger (DT), Layer Adjacency Discovery (LAD) and Transport Entity Capability Exchange (TCE)².

- The DT process is responsible for triggering the LAD and TCE processes. The DT process is realized through the Discovery Agent (DA).
- The LAD process is used for deriving an association between two TCPs/CPs that form a network connection/link connection in a particular layer network. The association discovered through layer adjacency discovery is valid as long as the trail supporting the link connection is valid. Preconditions of the LAD process include knowledge of the (T)CP IDs.
- The TCE process is used for exchanging information about the capabilities of the transport entities (e.g., Link Connections, Trails) in order to facilitate the negotiation of an agreed set of capabilities. Preconditions of the TCE process include knowledge of the Layer Adjacency information and the local capabilities information.

NOTE – If Layer Adjacency has been preconfigured, the LAD process may be omitted.

² TCE was called SCE (Service Capability Exchange) in ITU-T Rec. G.7714/Y.1305 (2001).