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Edition 2.0 2011-09

INTERNATIONAL STANDARD



**Information technology – UPnP device architecture –
Part 1: UPnP Device Architecture Version 1.0**



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INFORMATION TECHNOLOGY – UPnP DEVICE ARCHITECTURE –

Part 1: UPnP Device Architecture Version 1.0

FOREWORD

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International Standard ISO/IEC 29341-1 was prepared by UPnP Forum Steering committee¹, was adopted, under the fast track procedure, by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This International Standard replaces ISO/IEC 29341-1, first edition, published in 2008, and constitutes a technical revision.

The list of all currently available parts of the ISO/IEC 29341 series, under the general title *Information technology – UPnP device architecture*, can be found on the IEC web site.

This International Standard has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

¹ UPnP Forum Steering committee, UPnP Forum, 3855 SW 153rd Drive, Beaverton, Oregon 97006 USA. See also "Introduction".

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Introduction

What is UPnP™¹ Technology?

UPnP™ technology defines an architecture for pervasive peer-to-peer network connectivity of intelligent appliances, wireless devices, and PCs of all form factors. It is designed to bring easy-to-use, flexible, standards-based connectivity to ad-hoc or unmanaged networks whether in the home, in a small business, public spaces, or attached to the Internet. UPnP technology provides a distributed, open networking architecture that leverages TCP/IP and the Web technologies to enable seamless proximity networking in addition to control and data transfer among networked devices.

The UPnP Device Architecture (UDA) is more than just a simple extension of the plug and play peripheral model. It is designed to support zero-configuration, "invisible" networking, and automatic discovery for a breadth of device categories from a wide range of vendors. This means a device can dynamically join a network, obtain an IP address, convey its capabilities, and learn about the presence and capabilities of other devices. Finally, a device can leave a network smoothly and automatically without leaving any unwanted state behind.

The technologies leveraged in the UPnP architecture include Internet protocols such as IP, TCP, UDP, HTTP, and XML. Like the Internet, contracts are based on wire protocols that are declarative, expressed in XML, and communicated via HTTP. Using internet protocols is a strong choice for UDA because of its proven ability to span different physical media, to enable real world multiple-vendor interoperation, and to achieve synergy with the Internet and many home and office intranets. The UPnP architecture has been explicitly designed to accommodate these environments. Further, via bridging, UDA accommodates media running non-IP protocols when cost, technology, or legacy prevents the media or devices attached to it from running IP.

What is "universal" about UPnP technology? No device drivers; common protocols are used instead. UPnP networking is media independent. UPnP devices can be implemented using any programming language, and on any operating system. The UPnP architecture does not specify or constrain the design of an API for applications; OS vendors may create APIs that suit their customers' needs.

UPnP™ Forum

The UPnP Forum is an industry initiative designed to enable easy and robust connectivity among stand-alone devices and PCs from many different vendors. The UPnP Forum seeks to develop standards for describing device protocols and XML-based device schemas for the purpose of enabling device-to-device interoperability in a scalable networked environment.

The UPnP Implementers Corporation (UIC) is comprised of UPnP Forum member companies across many industries who promote the adoption of uniform technical device interconnectivity standards and testing and certifying of these devices. The UIC develops and administers the testing and certification process, administers the UPnP logo program, and provides information to UIC members and other interested parties regarding the certification of UPnP devices. The UPnP device certification process is open to any vendor who is a member of the UPnP Forum and UIC, has paid the UIC dues, and has devices that support UPnP functionality. For more information, see <http://www.upnp-ic.org>.

The UPnP Forum has set up working committees in specific areas of domain expertise. These working committees are charged with creating proposed device standards, building sample implementations, and building appropriate test suites. This document indicates specific technical decisions that are the purview of UPnP Forum working committees.

UPnP vendors can build compliant devices with confidence of interoperability and benefits of shared intellectual property and the logo program. Separate from the logo program, vendors may also build devices that adhere to the UPnP Device Architecture defined herein without a

¹ UPnP™ is a certification mark of the UPnP™ Implementers Corporation.