

APPL

Networking Applications

# DHCP and DNS

*Interpeak Networking Applications is a collection of four fundamental networking modules: DHCP, DNS, FTP and TFTP. All of them support both IPv4 and IPv6, and provides a powerful networking platform, explicitly designed for embedded systems.*

**The** Interpeak Applications bundle contains four of the most basic networking applications that are required in an embedded system: DHCP, DNS, FTP and TFTP. The applications are designed for both IPv4 and IPv6 operation\*, and are optimized for deployment in embedded systems. Furthermore, they are delivered in ANSI compliant C source code, with ready-to-run RTOS integration containing makefiles etc.

**DHCP** handles the task of configuring network devices with an IP address and other information about the network. In larger networks, this configuration is quite a time consuming and error prone work. With mobile clients such as laptops it gets even more complicated.

With the Dynamic Host Configuration Protocol - DHCP - the entire process of configuring devices on a network gets automated. With very little or no administrator intervention it is easy to accommodate new devices to the network. Another big advantage of DHCP is that it allows for easy connection of mobile devices. DHCP-enabled laptops can move from one place to another with no disturbances.

\* The DHCP client currently only supports IPv4 operation.

**DNS** is a service that maps symbolical computer names to IP addresses. This means that a system doesn't have to know the IP addresses of all peer systems in advance; it can ask a DNS server for that information.

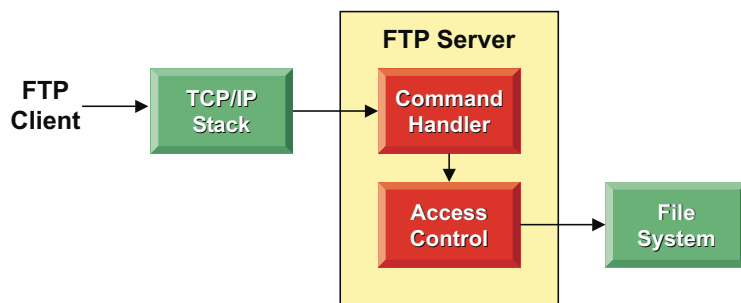
The Interpeak DNS client supports both IPv4 and IPv6 addresses. It also provides reentrant IPv6 versions of the `gethostbyname()` and `gethostbyaddr()` functions as defined in RFC2553. The new reentrant functions are named `getipnodebyname()` and `getipnodebyaddr()` respectively.

The DNS client also contains the `nslookup` utility program, which may be used to obtain information from name servers. This utility may also be integrated into the Interpeak Shell.\*\*

## Supported Standards

The DNS client supports the following RFCs:

- RFC1034—Domain Names, Concepts and Facilities
- RFC1035—Domain Names, Implementation and Specification.
- RFC1886—DNS Extensions to support IP version 6
- RFC2553—Basic Socket Interface Extensions for IPv6



*The architecture of the Interpeak FTP server.*

\*\* The Interpeak Embedded Shell with an integrated Telnet Server is part of IPCOM, a software module that forms a foundation for all other Interpeak products. Its purpose is to provide a uniform programming environment for all platform-dependent services in a system. It also provides a common set of library functions that are required in the Interpeak networking products. IPCOM is bundled with all Interpeak products.

# FTP and TFTP

**FTP** remains one of the most widely used protocols to transfer files across the Internet. Most Internet hosts contain FTP software by default, enabling file transfer to be performed in a uniform way.

The protocol operates between two hosts, a client and a server. The server defines a set of commands that are available to the client. A client may e.g. login to the server, create and inspect directories, change directory, check server status and finally send and receive files.

## IPv6 Capability

Both the Interpeak FTP client and server support the extended command set that is required for IPv6 operation. The client can also be configured to use the extended commands for IPv4 connections.

The server does by default provide two sockets, one for IPv4 and one for IPv6. The IPv6 support is however configurable, and can be removed for IPv4-only environments.

## Dual Client Interfaces

The Interpeak FTP client can be accessed in two ways—via a C language API and via a command-line interface. This means that a customer application can select to use only the API, and include customized FTP functionality in proprietary software.

The command-line interface coexists with the API—it is actually using the API—which means that both interfaces can be used in the same application.

## IETF Standards Compliance

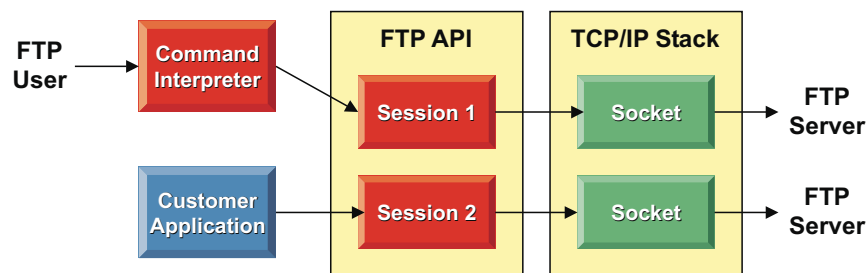
The FTP client and server support the following RFCs:

- RFC959—FTP
- RFC1123—Internet Hosts
- RFC2428—IPv6 Extensions
- RFC2577—Security

**TFTP** is a file transfer protocol like FTP, but was designed to be used when bootstrapping diskless systems. Since both the bootstrapping software and a protocol stack must fit in read-only memory on such systems, TFTP only provides basic file transfer functionality. Another optimization is that UDP is used instead of TCP to minimize the code size of the protocol stack.

TFTP is also useful in other situations where code memory is a limited resource, e.g. when distributing configuration data to embedded systems.

Interpeak TFTP contains both client and server modules. It supports RFC 1350, and is of course capable to handle both the IPv4 and the IPv6 protocol. The TFTP client provides the same kind of dual interface as the FTP client, i.e. a command-line interface and a C language API. Both interfaces can be used simultaneously.



*The Interpeak FTP Client can be accessed in two ways, through a BSD command-line interface and through a C-language API.*

### **Interpeak Secure Networking Software**

Interpeak provides state-of-the-art networking solutions specifically designed for embedded systems. The company's embedded networking and security software is currently used in thousands of applications across the globe.

Headquartered in Stockholm, Sweden, Interpeak operates through a global network of distribution channels and has its own sales and field application force dispersed in strategic locations worldwide, including the USA, Europe, and Asia. For additional information, please visit our homepage [www.interpeak.com](http://www.interpeak.com).

*All Interpeak products are trademarks or registered trademarks of Interpeak AB. Other brand and product names are trademarks or registered trademarks of their respective holders. The information in this document has been carefully reviewed, and is believed to be accurate and reliable. However, Interpeak AB assumes no liabilities for inaccuracies in this document. Furthermore, Interpeak AB reserves the right to change specifications embodied in this document without prior notice.*

*Version 1.23-r5. Copyright © 2005, Interpeak AB. All rights reserved.*