

NicheStack™ Dual IPv4/IPv6 Dual Standard Device Networking



The Specialist
Provider of Software
and Expertise for
Device Networking

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NicheStack Dual offers a unique and flexible combination of networking support for devices that must operate in today's IPv4 based networks and be compatible with future upgrades to IPv6 environments. NicheStack Dual is a device optimized protocol stack that handles simultaneous IPv4 and IPv6 networking traffic in a seamless and efficient manner. IPv4 and IPv6 communications can be established on a connection by connection basis offering the greatest flexibility in run-time flexibility and equipment interoperability. The design of the IPv6 header means that IPv4 headers and IPv6 headers are not interoperable meaning that, for a mixed environment, a host or router must use a dual IPv4/IPv6 implementation, like NicheStack Dual, in order to recognize and process both headers. InterNiche Dual incorporates and supports all the key features of the IPv6 architecture:

- Simplified header structure
- Larger IP address space
- Efficient and hierarchical addressing and routing infrastructure
- Stateless and stateful address auto-configuration
- Integral IPSec security
- Support for QoS

NicheStack Dual Highlights

- Enables support of mixed IPv4 and IPv6 traffic on per-connection basis
 - IPv6 Host functionality
 - IPv6 ND and RD Address Resolution
 - Raw IP/UDP/TCP with BSD-compatible sockets
 - Support for IPv6 Multicast and Neighbor Discovery
 - Optimized data copy for ultra fast performance
 - Non-blocking versions of all functions
 - Versatile MSS and window options
 - Connections limited only by memory availability
 - Optimized assembly language checksum routines available
 - "Predictive" header processing for improved performance
 - Nagle Algorithm (Slow Start)
 - VJ Smoothed Round Trip Timing
 - Delayed ACKs
 - BSD style "Keep-alive" option
 - NicheTool™ tuning and system optimization utility included
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- New protocol for neighboring node interaction
 - Provisions for Protocol Extensibility

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NicheStack Dual is fully RFC compliant and has been extensively tested for interoperability with reference IPv4/IPv6 implementations. Advanced features such as IPSec or SSL/TLS security, full device management and rapid IP-failover make NicheStack the developers choice for transitioning to future secure device and high availability development projects.

NicheStack Dual also includes NicheTool, the most comprehensive debug and system optimization tool available in any commercially TCP/IP stack. Menu driven, and customizable by development engineers for any added components, this very useful utility greatly assists the process of optimizing NicheStack for the memory usage and performance characteristics of the application.

Key Technical Specs

- RFC1809 Using the Flow Label Field in IPv6
- RFC1881 IPv6 Address Allocation Management
- RFC1886 DNS Extensions to support IP version 6
- RFC1887 Architecture for IPv6 Unicast Address Allocation
- RFC2133 Basic Socket Interface Extensions for IPv6
- RFC2147 TCP and UDP over IPv6 Jumbograms
- RFC2292 Advanced Sockets API for IPv6
- RFC2373 IP Version 6 Addressing Architecture
- RFC2374 An IPv6 Aggregatable Global Unicast Address Format
- RFC2375 IPv6 Multicast Address Assignments
- RFC2428 FTP Extensions for IPv6 and NATs
- RFC2460 Internet Protocol, Version 6 (IPv6)
- RFC2461 Neighbor Discovery for IP Version 6 (IPv6)
- RFC2462 IPv6 Stateless Address Autoconfiguration
- RFC2463 Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification
- RFC2464 Transmission of IPv6 Packets over Ethernet
- RFC2465 Management Information Base for IP Version 6: Textual Conventions and General Group
- RFC2471 IPv6 Testing Address Allocation
- RFC2472 IP Version 6 over PPP
- RFC2775 Internet Transparency

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InterNiche Device Networking Products

InterNiche is the premier **specialist provider** of internet protocol software stacks and networking expertise specifically targeted at connected device implementation. InterNiche offers a broad range of embedded TCP/IP protocol suites, **optimized** for maximum performance and minimum memory footprint on the highly integrated VLSI at the heart of today's low cost device designs.

All InterNiche device networking products are engineered for **rapid, seamless integration** with best-in-class development environments for the leading VLSI architectures. The combination of rapid integration and low overhead specifically addresses the challenges faced by device development teams by offering **maximum networking performance** and manageability within a low cost system implementation.

InterNiche provides a tasking API that is adaptable to almost any RTOS environment, so that the development team can easily interface to the necessary functions and incur **no additional overhead**. Throughput is maximized through effective usage of zero-copy buffers and availability of assembler optimizations for critical code sections.

A **modular approach** to the entire suite of protocol products maintains a development team's capability to profile stack features to match specific device requirements. With **configuration flexibility** and the tools to identify and eliminate integration problems development teams find that system integration using InterNiche products is **smooth and predictable**.

InterNiche products are supplied as **portable ANSI C** source code packages under **royalty-free** license terms. All products include full technical documentation and a first 12 months of **highly responsive support** service, which includes access to technical experts via email, web, Fax, and telephone.

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