



InterNiche Technologies, Inc.
NicheStack™ Release 3.0 – Q4 2005

Announcing NicheStack 3.0

InterNiche Technologies is proud to announce the latest major release of its family of specialist TCP/IP protocol products for networked devices. NicheStack 3.0 offers an important set of additions and improvements to the products, while continuing a focus on addressing the challenges faced by device development teams - enabling a proven networking and device management capability optimized for low cost embedded system implementations.

NicheStack 3.0 products offer comprehensive support of TCP/IP IPv4 and IPv6 networking and device management standards, a seamless upgrade from IPv4 to IPv6 host support, utility protocols and tools for IPv4 and IPv6, an optimized CryptoEngine security subsystem and many additional socket control options for tuning advanced networked applications. With this release, InterNiche is even more clearly the leading resource for connected device implementation in next generation network infrastructures – with performance matched to sophisticated high speed LAN deployment, efficient device security implementations and robust support for cellular and wireless applications. NicheStack technology in its IPv4, IPv6, Dual IPv4/IPv6 or the ultra-compact NicheLite configuration, offers functionality and footprint that scales for use in small embedded sensor and control devices to powerful industrial, medical, office automation and enterprise connectivity designs.

As with all InterNiche products, NicheStack 3.0 protocols are robust, efficient and highly configurable, with proven portability to the widest variety of CPU architectures, run-time environments and development tool chains. In addition, InterNiche is developing a focused platform support program that initially targets some of the leading low cost 32bit microcontroller products – architectures driven by Freescale, ARM and Altera – with an emphasis on optimized performance and broad family support for best-in-class tools and operating systems on these parts.

New Features and Updates

NicheStack 3.0 offers an important set of additions and improvements to the product range, including these key upgrades:

- Re-validation of the entire NicheStack IPv6 codebase with TAHI testing standards (see <http://www.tahi.org>).
- Re-engineered integration of IPv6 into primary code base, giving more seamless upgrade path from IPv4 to dual IPv4/IPv6 stack and next generation network support.
- Integration of CryptoEngine and unified cryptography library in all protocol products that require authentication or security subsystems.
- Support for syslog reporting (over IPv4 and IPv6),
- Integration of SNMP v1/v2c/v3 over IPv6 connections
- Support for TFTP over IPv6 connections
- Optimized HTTP 1.1 support within the HTTPServer
- Socket options to support explicit application access to TTL, ToS and other QoS related protocol options and flags.
- Availability of a standardized Linux GNU tool chain reference port of NicheStack protocols to facilitate cross development environments. This complements the upgraded Win32 reference port.
- Address open CERT vulnerability and product issue reports

Platform Strategy and Platform Updates

The dramatic reduction in the perceived cost of 32bit processor cores for microcontrollers and the aggressive integration of peripherals and memory on these parts have eliminated many of the historical issues of networking support in low cost device designs. Vendors who are helping to drive the industry switch from 8/16bit design paradigms to more capable 32bit microcontrollers include Freescale (especially with its ColdFire product family), Philips & Atmel(ARM7 and ARM9 core based product families) and Altera (highly capable 32bit Nios II soft core CPU for FPGA implementation).

InterNiche offers portable source code products that are independent of HW, RTOS and tool chain vendor, and will align it's porting and demonstration support behind combinations HW and SW platforms that have critical mass in the device networking

industry to underscore the specialization and optimization of its products for these markets.

- Update and expand standard Network Evaluation Kit platforms to include popular devices with ColdFire, ARM7, ARM9 and Altera/Nios II CPU architectures. Support for these platforms will include standardized memory and performance benchmarks profiles

With release 3.0 products, InterNiche continues to address all your functional requirements *and* your unique resource constraints.

Engineering Updates

As with all major product releases, InterNiche has taken the opportunity to incorporate its history of responses to a range of engineering and support related questions within the primary code base. This includes responses to recent CERT advisories on TCP vulnerabilities and usage issues. Some of the most important of these issue resolutions and updates are listed below. More detailed information about specific status on any of these items can be requested from support@iniche.com.

Issue ID	Top level description
889	SNMPv2c should encode its traps as V3_TRAP_PDU (7) and not as TRP_REQ_MSG (4)
900	Always call prep_ppp() for dynamic interfaces
908	Trap target not read from webport.nv (SNMP)
910	Wrong ver sent in GET RESPONSE (SNMPv2c)
937	SNMP products should support the new RFCs 3411-3415 from old RFC2571-2575
938	rfc3418.mib should support new sysServices values
939	A console command is need to display certain SNMPv1/SNMPv2c parameters
940	sysContact value from webport.nv not used (SNMP)
941	Multiple snmp_vie.h files in source tree (SNMPv3)
942	SNMPv1 - ifdef needed around parse_var_op_list
943	Add support for RFC3418 Object Resources Table (SNMP)
944	SNMPv3: MIB support needed for snmpNotifytable (rfc3413)
945	SNMPv3: support for rfc3584 needed (Community MIB)
948	Protect ppp_static initialization for PPPoE-only configuration (Win32)
950	PPP_DNS: received Conf-Nak can enable negotiation
953	extra ".1" in index for ipNetToMediaTable (SNMP)
959	Add SNMP support for IPv6 (RFC3419)
1002	Implement RFC3414 KeyChange (SNMPv3)
1004	Simple users can't be added to user table (SNMPv3)

1005	User table disabled when V3_USE_AUTH is disabled (SNMPv3)
1006	new 2.0 Sockets API should be used (SNMPv1)
1008	usmUserPublic's default value should be "" (SNMPv3)
1012	AuthPriv doesn't work with AdventNet version 4 (SNMPv3)
1015	Update documentation to reflect Sockets API changes
1016	Drop pkts of unsupported versions (SNMPv3)
1017	v3port.obj not added to snmpv3.lib (SNMPv3)
1018	SET allowed for read-only object (SNMPv3)
1019	v3_send_identical() doesn work for auth+priv case (SNMPv3)
1020	AuthPriv case doesn't work with MGSoft (SNMPv3)
1022	GetNext on last obj should return endOfMib (SNMPv2c)
1027	SNMP: How to find out supported versions from cmdline
1028	IPv6 - struct ipovly needs to be changed for Dual IPv6/IPv4 Stack.
1029	SNMP - drop pkts of unsupported versions
1030	RowStatus not properly implemented (SNMPv3)
1031	VACM conformance tables (SNMPv2c)
1032	GetBulk with n=0, r=0 (SNMPv3)
1033	GetBulk with n=0, m=0 (SNMPv2c)
1034	snmpInASNParseErrs not incremented (SNMPv2c)
1035	Getbulk with n=0, r=0, v=0 (SNMPv3)
1036	long instance-id not handled (SNMP)
1037	some counters not incremented (SNMPv3)
1039	TCP Data Corruption and Packet Buffer Leak (IPv6)
1040	TCP checksum bug (IPv6)
1041	Potential Packet Leak and TCP Packet Corruption (IPv6)
1043	TCP_NODELAY misleading as it disables Delayed ACKS instead of Nagle
1044	Implement a way for an app to disable Nagle on a per connection basis
1045	t_getsockopt() implementation incomplete.
1046	Provide a PPP keepalive mechanism
1047	addroute won't take new entry when table is full
1052	authPriv - wrong authentication digest (SNMPv3)
1053	update boot count on reboot (SNMPv3)
1054	UDP:wrong UDPHDRLEN affects udp_alloc()
1055	extra debug check required in pk_free()
1057	NAT Router needs a way to allow IPSEC traffic to pass through
1061	slipstuff() data length is not updated correctly (SLIP)
1062	MTU Frame Size and Local Buffer don't confirm to RFC (SLIP)

1063	Misc issues (SLIP)
1064	Race Condition Bugs (SLIP)
1065	delete first multicast record
1066	SLIP - Loss in communication due to spurious 0xc0 byte
1068	A PPP peer requesting DNS addrs can confuse both state machines
1070	Incorrect error status - V3_VB_WRONGLENGTH (SNMPv3)
1071	packet fragment with DF when NATRT is on
1072	Bad code returned for ICMPDU, Time expired message
1074	ARP can pend only 1 packet
1079	HTTP - File upload of large file fails (> 32K)
1081	Add socket options for IP_TOS, IP_TTL
1084	PPP reconnect fails when ppp is killed during data traffic
1085	LCP "tld" bring the link down (PPP)
1086	TCP Vulnerabilities against ICMP DOS Attacks
1087	Interniche PPP client MD5-CHAP authentication fails with Win2K server
1092	Problems with http upload
1093	tcp window scaling is too small
1097	Post to non-existent CGI page causes stack to panic
1098	BTREES panic on delete
1099	RIP panics in menu and doesn't work with BTREES
1100	802.3 - Various bugs in 802.3 code path
1101	Bug in IPADDR_TO_NETP() (IPMC)
1102	LOCK_NET_RESOURCE() bugs in t_getname() socket call
1103	mbuf leaks in Sockets API - t_getname()
1105	"Empty" entry added to SMTP alerter recipient database
1107	Missing call to smtp_init () in SUPERLOOP mode
1109	Incorrect computation of POP3 session id in generate_sid (), pop3cgi.c
1110	Fix for compile-time errors for rtraverse () (BTREE_ROUTES)
1111	Incorrect invocation of avlremove () in del_route () (BTREE_ROUTES)
1112	Bug in avlremove () causes failure in removal of nodes from AVL tree
1114	Fix byte ordering for IP address parameter to del_route (BTREE_ROUTES)
1115	Incorrect display of route table when BTREE_ROUTES is enabled
1116	Modify rt_lookup (non-BTREE_ROUTES) to implement longest prefix match
1119	Fix race condition wrt xmtcount in control structure in NE2000

Availability

NicheStack release 3.0 is available to all new customers and customer with current support contracts from early November 2005.

About InterNiche Technologies

InterNiche is the specialist provider of embedded Internet protocol software stacks and networking expertise targeted for connected device implementation. NicheStack™ IPv4 and its other TCP/IP protocol products are engineered for rapid, seamless integration with best-in-class development environments for each VLSI architecture family. The combination of smooth integration and low run-time overhead specifically addresses the challenges faced by device development teams by offering proven networking capability and device management optimized for low cost system implementation. InterNiche is headquartered in Campbell, CA.

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