



**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](mailto: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)                            |

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| 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 UDPHDRSLEN 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)           |

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| 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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