Based upon OpenWRT Linux® distribution for embedded systems

QorIQ LS1012A Low-Power Communications Processor Broadband Home Router Application Solution Kit

NXP offers a vertically integrated and comprehensive Linux®-based OpenWRT broadband home router (BHR) application solution kit (ASK) for OEMs and ODMs building multi-segment network products based on QorIQ LS1012A communications processors.

TARGET APPLICATIONS

▶ Small business router

▶ Broadband home router

▶ Mobile broadband router

▶ Integrated services

▶ MiFi® wireless router

▶ Consumer wireless access point

▶ Enterprise access point

▶ Security gateway

OVERVIEW:

The ASK's feature-rich OpenWRT software package enables OEMs and ODMs to significantly shorten their software design cycles and achieve quicker time-to-market without compromising on quality or features.

The turnkey software stack optimally leverages the packet accelerators within the QorIQ LS1012A and delivers wire speed performance with less than 5% load on the ARM® core. OEMs and ODMs can benefit from the free CPU by adding more value-added services without introducing redundant hardware, thereby reducing system costs. The BHR software, coupled with our QorIQ LS1012A communications processors, offers a highly optimized network stack and scalable platform that will help OEMs and ODMs meet the demanding needs of next-generation consumer or enterprise networks reliably and efficiently.

QorIQ LS1012A OpenWRT LINUX BSP AND ASK OVERVIEW

The ASK package includes access to the source code of all the board support packages and OpenWRT broadband home router ASK and binaries of packet forwarding engine. A list of supported third-party software ecosystem categories is shown below.

Linux OpenWRT

▸ U-Boot

▸ BSPs

▸ Linux kernel (3.19)

▸ Linux file system

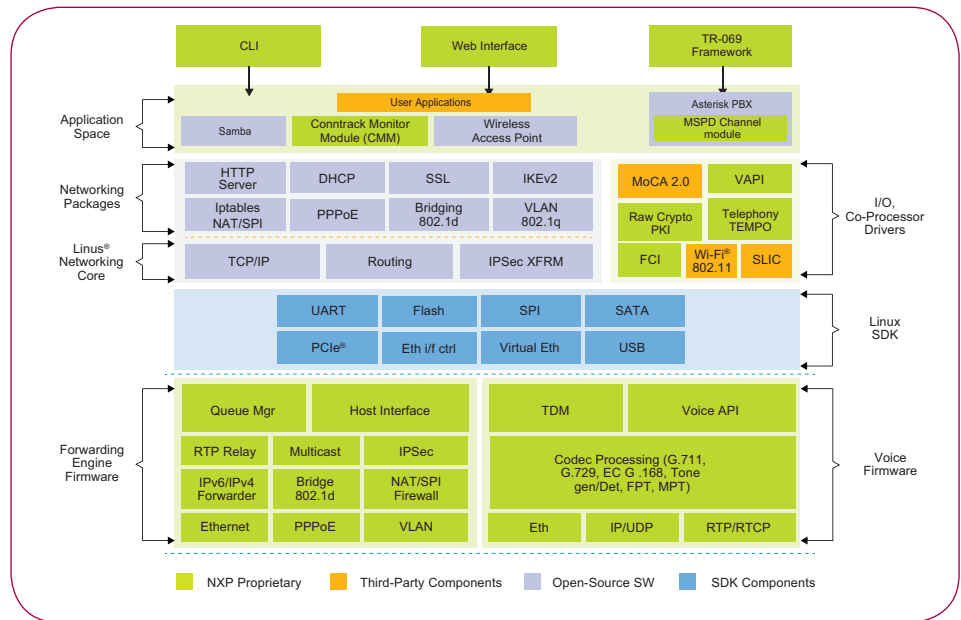▸ Application drivers

▸ Binary for packet forwarding engine

Networking services

▸ TCP/UDP

▸ IPv4

▸ RFC 2684 routed, bridged

▸ PPP/PPPoE

▸ ICMP

▸ NAT/NAPT

▸ IGMP and MLDv6

▸ DHCP/DHCPv6

▸ 802.1d bridging

▸ IP forwarding

▸ 802.1p, 802.q

▸ (s)RTCP

▸ (s)RTP

IPv6

▸ Base protocol

▸ Neighbor discovery

▸ Auto-configuration

▸ ICMPv6

▸ Multicast addressing

▸ MLDv2

▸ DHCPv6

▸ IPv6/IPv4 dual stack

▸ IPv4 over IPv6 tunneling

▸ MLDv2 snooping driver support

▸ Multi-tier wireless LAN vendor driver support for 11n and 11ac

▸ USB stack

QorIQ LS1012A PROCESSOR BROADBAND HOME ROUTER ASK BLOCK DIAGRAM

Features	Benefits
Programmable packet forwarding engine	• Delivers 2 Gbit/s performance and provides flexibility to offload current and future bandwidth demanding applications. • Offloads NAS TSO & LRO operations to hardware. Reduces CPU load.
Hardened OpenWRT distribution	• More than six years of rigorous field tests and millions of deployments • Hardened and mature software distribution reduces time-to-market
Flexible and highly optimized software architecture	• Easy to port and integrate third-party software stacks • Significantly reduces software design cycle • Ensures ample headroom for run-time services even during peak performance
Hardware security	Support for Secure Boot and trusted environment with high-performance SEC engine and gigabit encryption
BSPs for hardware reference EVM	Suitable for software development and ASK performance benchmarking

▸ PCIe stack

▸ I²C driver

▸ SPI driver

▸ Gigabit Ethernet MAC drivers

▸ IPsec engine control

▸ UART access

▸ GPIO control

▸ Interrupt service routine

Security

▸ SPI firewall

▸ IKE IPsec

▸ OpenSSL

▸ L2TP, PPTP, ETHERIP

Client/Server

▸ FTP

▸ Telnet

▸ SSH

▸ SAMBA

▸ NFS

▸ NTP

QoS

▸ Classful & classless queuing

▸ Traffic shaping

▸ Rate limiting

▸ Ingress control

▸ DiffServ

Fast Path Support

▸ TCP/UDP

▸ IPv4/IPv6

▸ PPPoE

▸ NAT/NAPT

▸ IPsec/SSL

▸ DPI/SPI

▸ EtherIP

▸ 4RD/4 over 6

▸ Egress QoS

▸ Traffic shaping and rate limiting

▸ IPv4/IPv6 Multicast

▸ RTP relay/cut thru

Accessibility

▸ WebGUI content management system

▸ CLI

▸ Telnet

▸ SSH

▸ TR-069 callback framework

Diagnostics

▸ TCPDump

▸ Cyclesoak

▸ RTP/RTCP stats

Codec Support

Third-Party Solutions

Ordering Part Number:

▸ LS1012A-SW-ASK ($10,000)

Part Number Includes:

▸ Access to BHR software stack

▸ Access to binaries for PPFE

▸ NXP point-of-contact application engineer to resolve customer issues

QorIQ LS1012A SUPPORT PLAN OPTIONS

Support level	Premium	Plus
Part numbers—LS1012A	LS1012A-SWSP-PRM	LS1012A-SWSP-PLS
New ASK software releases*	•	•
Assigned a voucher ID for software support issues	•	•
Access to test codes to facilitate early feature integration	•	•
Ability to request custom features	•	
Software support hours included	250	100
Annual fee	$50,000	$25,000

* New Software Releases—regular updates to the QorIQ LS1012A software are made available via NXP production and patch releases.