

Single Chip Network Platform

NetBurner Single Chip Network Platform Software and Protocols

Applicable hardware platforms: SBL2e

The NetBurner Solution

NetBurner's solution is unique because it enables you to write application specific code immediately. All of the necessary elements are combined in a unique package that lets you concentrate on developing your product instead of reinventing network protocols and designing hardware.

Network Software and Protocols

The NetBurner designed TCP/IP protocol suite is optimized to work with our high-performance embedded systems. It includes UDP, DHCP, ARP, DNS, ICMP, and a Web Server (HTTP) as standard components. The web server (HTTP) supports dynamic HTML, Java, Flash Player, Ajax, forms, cookies and passwords. The project directory of HTML documents, gifs, and JAVA classes is compiled into a file that is embedded in the run-time application.

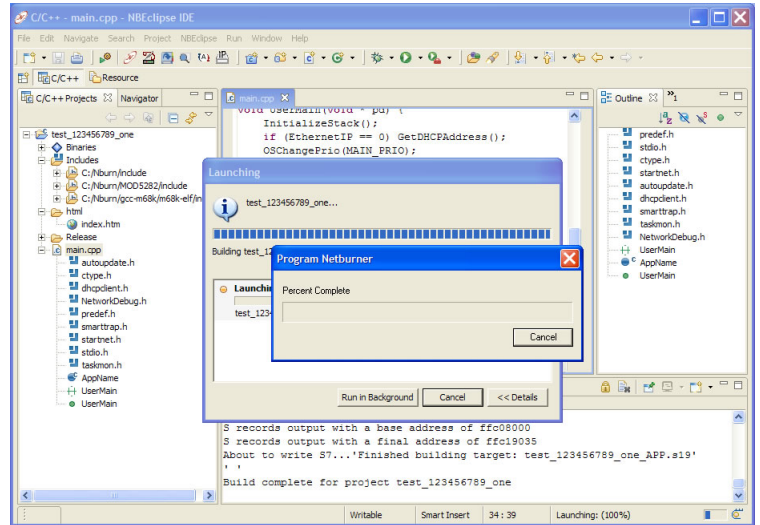


Figure 1: NetBurner Eclipse IDE with one click compile-and-load

Table 1: The NetBurner TCP/IP Protocol Suite

Product	Software Description
ARP	Maps an IP address (such as 192.168.2.1) to a physical address (such as 00-02-F4-02-61-1F) on an Ethernet LAN.
DHCP	Enables hardware to join a network by automatically configuring its IP address
DNS	Translates URL text addresses (such as NetBurner.com) into a numeric Internet address (such as 216.75.35.168)
HTTP / Web Server	Use a standard web browser to access your custom web pages that control, monitor, or configure the hardware
IP	Protocol used to send data over a network or internet
Ping / ICMP	Performs a quick test to see weather a particular host is reachable across an IP network
TCP	Send and receive network data with this compact, hardware optimized, high-performance protocol
Telnet	Communicate with your hardware by creating a remote connection through a standard TCP telnet session
UDP	Use this high performance communication protocol to coordinate the one-way transmission of data over a local network or Internet

Table 2: System Software

Product	Software Description
uC/OS RTOS ¹	This full-featured preemptive real-time OS allows you to easily create multiple tasks, semaphores, mail boxes, mutexes, timers and more
C/C++ Compiler and Linker	Begin writing code immediately with the familiar ANSI compliant GCC C/C++ compiler and linker

Table 3: Development Software

Product	Software Description
NetBurner's Eclipse IDE	Shorten development time with one click compile-and-load capability, intelligent code completion, and an integrated debugger
Example Source	Source code examples show you how to load your first webpage, control serial ports, or create applications
Command Line Tools	Link the NetBurner tools to your favorite development environment such as Codewrite or Visual SlickEdit.

Note:

1. The NetBurner version of uC/OS has many added features not included with uC/OS-II. We do however encourage developers to read

"MicroC/OS-II" by Jean Labrosse, since most of the functions are basically the same.

Real-Time Operating System

The included uC/OS RTOS is a pre-emptive multitasking real-time operating system designed to be very efficient and full featured, providing rapid real-time response and a small footprint. You can easily create and manage multiple tasks and communicate between tasks with the intuitive API. The RTOS is integrated with the I/O system to make communication with the other system components (such as the TCP/IP Stack), quick and easy.

- Based on uC/OS
- Pre-emptive with priority scheduling
- Semaphores, Mail Boxes, Message Queues and FIFOs
- Timers
- Stack Checking
- Task debugging tools

C/C++ Compiler and Linker

The GCC C/C++ compiler is one of the most well known and widely used ANSI compliant compilers available today. NetBurner maintains and supports the latest updates and releases so developers can stay focused on product development. Each release of GCC is tested with the NetBurner tools and software.

- Fully ANSI compliant C/C++ compiler and linker
- Integrated with the NetBurner Eclipse IDE. It can also be used with other IDE's such as Codewrite and Visual SlickEdit, or run from a command prompt

Eclipse based Integrated Development Environment

The full-featured NetBurner Eclipse Integrated Development Environment (IDE) for C/C++ enables you to create, edit and download applications

- One-click compile and load to target flash
- Application Wizard to create new applications
- Intelligent code completion
- Bracket matching
- Auto Indentation
- Build Environment
- Customize views to fit work style
- Full-featured web browser
- Customizable syntax highlighting
- Project manager
- Managed makefiles
- Network flash code image update capability
- Class browser and function listing

Table 4: Deployment and Code Update Tools

Product	Software Description
AutoUpdate	Easily download a new code image to your device from any point that has network access
IPSetup	Quickly configure your device through a network connection (even if its IP address is not configured)
MTTTY Serial Terminal	Use this simple high performance serial communications program to communicate with your serial devices
TaskScan	View all your application tasks (and their status) over a network connection
SmartTrap WinAddr2Line	This network debugging tool will help you troubleshoot where your application trapped

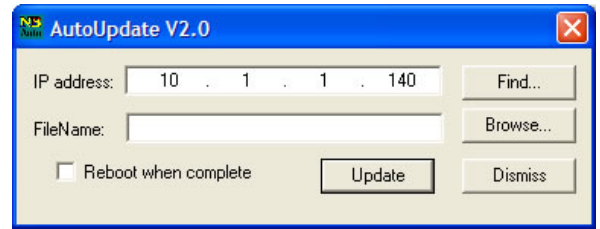


Figure 2: Download a new code image to your device from any point that has network access

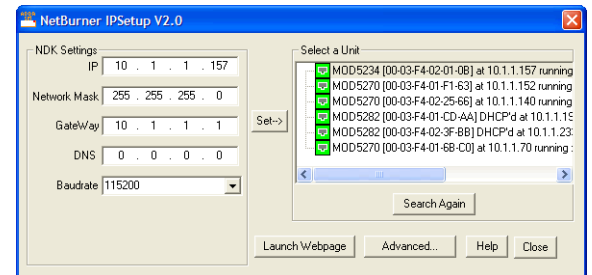


Figure 3: Network Configuration is simple with the included NetBurner IPSetup Tool.

Runtime Environment

Complete I/O system supports TCP, Telnet and serial ports. I/O includes read, write, select, fprintf and fscanf functionality.

- User Parameter Flash storage routines
- Embedded Monitor supports serial and network code updates
- Programmable default exception handling
- Display watch variables, processor registers, memory areas and stack
- Point at variables to display values

Application Update

Update applications using a serial port or through a network connection using NetBurner Autoupdate. Examples of each method are included. Compile, link, download, program flash, and reboot your NetBurner device during development in one simple step

Device Configuration

Quickly and easily configure network and other device settings through a network connection using the NetBurner IPSetup utility, even if the device's IP address is 0.0.0.0