



**Purpose-Built
N440BX and T440BX Server Boards**
Configuration and Operating Summary of the
Emergency Management Port

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Revision History		
Date	Rev	Modifications
5/20/98	1.0	Initial Release
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Introduction

This document is intended to serve as a “quick start guide” to the configuration of the Emergency Management Port (EMP) on an Intel® N440BX or T440BX based server system. The N440BX/T440BX Product Guide and Technical Product Specification (TPS) provide additional detailed information on the Emergency Management Port. The Product Guide is available on the Resource CD-ROM that comes with the Purpose-Built Server Board.

Assumptions

It is assumed that the integrator has a basic familiarity with BIOS (Basic Input/Output System) Set-up, serial port and modem configuration.

It is further assumed that the integrator has configured an Intel N440BX or T440BX based Server system with the following minimum components. An Intel N440BX or T440BX Server Board integrated in an approved chassis, a minimum of one Intel Pentium® II Processor, a processor terminator card in the secondary slot 1 connector, and a 32MB (SDRAM DIMM) system memory. Refer to the N440BX or T440BX Product Guide, Technical Product Specification, tested chassis and power supply document, tested memory document, and the supported Hardware and Operating System documents. These documents can be found at the Intel Corporation sites <http://support.intel.com/support/motherboards/server/n440bx> for the Intel N440BX Server Board or <http://support.intel.com/support/motherboards/server/t440bx> for the Intel T440BX Server Board.

Supplemental Hardware and Software

In order to employ the EMP remotely a Hayes* compatible external modem must be attached to the COM2 port of the N440BX/T440BX based server system. Additionally, the EMP Console software utility must be installed on an Intel® Architecture PC with a modem running Microsoft* Windows 95* or Windows* NT* 4.0 Workstation. Among others, 3Com* US Robotics* Sportster*, and Courier* external modems have been demonstrated to effectively work with the EMP.

EMP Overview

The Emergency Management Port provides a rudimentary degree of remote server management with virtually no additional cost. It operates on top of the Server Board's BIOS, independent of the Operating System. The following capabilities are provided:

- Server power up/down
- System reset
- Text-console redirect (focused on remote BIOS set-up)
- Viewing access to critical event logs stored in Non-volatile memory (NVRAM)
 - System Event Log (SEL) – log of all critical server events, used for server monitoring and management.
 - Sensor Data Records (SDR) – listing of all sensor fields programmed in the firmware of the Baseboard Management Controller (BMC) used for server management monitoring.
 - Field Replaceable Units (FRU) – listing of all replaceable components by serial number.

The EMP Console utility is a 32 bit graphical user interface software utility designed to be installed on a PC running Windows 95 * or Windows NT 4.0 Workstation. EMP Console installation diskettes can be created from the N440BX/T440BX Server Board Resource CD-ROM that ships with either product. The EMP Console connects to the Purpose-Built Server's COM2 port through either a serial-serial link or in most cases, a modem.

Note:

The EMP has an 800mA +5V Standby power requirement. The N440BX/T440BX Server Boards must be powered whenever the server system is plugged in. Ensure the power supply selected to power your integrated N440BX/T440BX server system fulfills this power requirement. See the tested chassis and power supply summary at

<http://support.intel.com/support/motherboards/server/n440bx/compat.htm>

<http://support.intel.com/support/motherboards/server/t440bx/compat.htm>

Server Set up:

Hardware configuration used:

Intel N440BX Server Board, Intel Astor chassis, two Intel Pentium II Processors with 100MHz System Bus, operating at 350MHz, 128MB Micron* PC/100-compliant 100MHz SDRAM (four 32MB 168pin Gold DIMMS), 1 Seagate* ST32550WC Barracuda* Hard Disk Drive, Hitachi* 24xIDE CD-ROM, Teac* Floppy diskette drive, 3Com* US Robotics* Sportster* 28.8 external modem.

1. If intending to use the Purpose-Built remote capability of the EMP through a modem, connect an external modem capable of 19.2 KBPS to the Server's COM2 port.
2. Power on the N440BX server system, pressing <F2> prior to completion of POST (Power On Self-Test) in order to enter BIOS Set-up.
3. Using the left/right cursor arrow keys select the tab menu labeled "Server."
4. Using the down cursor arrow key select "System Management" and press <Enter>.
5. Select "EMP Password Switch" to <Enabled>.
6. Select "EMP Password" and enter the password to be used for that particular server from the EMP Console utility.
7. Leave the following selectable fields as default:
 - "EMP ESC Sequence"
 - "EMP Hangup Line String"
 - "Modem Init String"
 - "High Modem Init String"
8. Select "EMP Access Mode" to <Always Active>. Available modes include:
 - Always active - the COM2 Port is always used by the EMP and invisible to the Operating System (recommended for full functionality).
 - Pre-Boot - EMP only has control of the COM2 port when the server is powered down or prior to the completion of POST.
 - Disabled - EMP is unavailable.
9. Select "EMP Restricted Access" to <Disabled>. Available options include:
 - Enabled - prevents power down and reset control via the EMP.
 - Disabled - all EMP capabilities are available.
10. Select "EMP Direct Connect/Modem Mode" to <Modem>. Available options include:
 - Modem - external modem connected to COM2 port.
 - Direct Connect - serial-serial connection between server's COM2 port and PC running EMP Console utility.
11. Select <ESC> to back up to the "Server" menu
12. Select "Console Redirection"

13. Select “**Com Port Address**” and select <2F8>, the address for COM2. EMP requires COM2 to function.
14. Select “**Baud Rate**” as <19.2K>, this is required for proper communication between the Baseboard Management Controller (BMC) and the modem via the Super I/O.
15. Select “**Console Type**” as <PC ANSI>.
16. Select “**Flow Control**” as <CTS/RTS + CD>, Hardware + Carrier Detect for modem use. **Note if using a null modem cable, this must be set to <CTS/RTS >.**
17. Select <F10>, save and exit, the server will save the BIOS changes to NVRAM and reset.

EMP Console Set-up:

Hardware configuration used:

Intel R440LX Server Board, Intel Columbus II chassis, one Intel Pentium II Processor operating at 300MHz, 64MB Micron 66MHz SDRAM (two 32MB 168pin Gold DIMMS), 1 Western Digital Caviar* 1600 EIDE Hard Disk Drive, Hitachi 24xIDE CD-ROM, Teac Floppy diskette drive, Microsoft Windows NT* 4.0 Workstation operating system with Service Pack 3, US Robotics Sportster 28.8 internal modem.

1. Install the modem and boot the system to the operating system.
2. Open “**Start,**” “**Settings,**” “**Control Panels,**” “**Add New Hardware,**” “**Properties**” and configure modem speed for 19.2Kbps. This is necessary because there is no operating system on the server to negotiate the modem speed with the client; and the operating code of the N440BX/T440BX Baseboard Management Controller is optimized for 19.2Kbps.
3. Create the EMP Console utility diskettes from the N440BX/T440BX Server Board Resource CD by booting to ROM-DOS on the CD, selecting “**Make Diskettes,**” “**By Device/Function,**” “**EMP Console.**” Ensure you have two blank floppy diskettes.
4. Install the EMP Console utility on the target system from the diskettes created by running a:/setup.exe from diskette 1. If during the install process you are asked: “Do you want to install an older file than you already have on the system?” Select <No>.

Note: If using Microsoft Windows NT* 4.0 with Service Pack 3 you must reinstall Service Pack 3 after EMP Console installation is complete. This procedure is also recommended anytime you install a significant application after a Windows NT Service Pack has been installed.

5. When Installation is complete launch the EMP Console from the EMP Console Folder with the file EMPConsole.exe.
6. Select the “Connect” icon and the preferred method, options:
 - Direct - serial to serial connection to COM2 Port of the server
 - Dial up (used in this example) – modem connection. First a server name and phone number must be established in the EMP Console phone book. The server name in the EMP Console phone book does not need to correspond with the actual server name.
7. Enter the password set in the server’s BIOS set-up. If the incorrect password is entered a security breach attempt event is logged to the System Event Log. After three incorrect password attempts the user is “locked out” for 30 seconds. If the password is forgotten, it may be cleared with **the “Clear CMOS”** jumper on the Server Board. However, clearing CMOS (NVRAM) will clear all BIOS Set-up values. Ensure you write down your server’s user configured BIOS settings prior to clearing the CMOS with the jumper.
8. After connection is established all EMP functions allowed in server BIOS set-up are available.

Troubleshooting

This section is not intended to be a tutorial on repair and system troubleshooting. It is intended to provide hints for the technician. If the problem system has just been assembled, a first step should be to check the system against the assembly procedures in the printed Intel N440BX or T440BX Server Board “Quick Start Guides,” and the electronic Intel N440BX or T440BX Server Board Product Guide. All guides are provided on the Resource CD in the Server Board kit, and on the Intel Corporation’s support website, listed below.

Trouble Shooting Information	
Problem	Possible Solution
System fails to boot	<p>General: Check power. Check cabling, connectors and socketed components are properly seated. Remove all components except minimal memory and a processor and reboot. If possible check individual components (especially processors and memory) in a known good system.</p> <ol style="list-style-type: none"> 1. Check for processor termination card in empty slot 1. 2. Check for approved memory DIMM modules. 3. Check to assure that the power supply is attached to correct connectors (two along the edge of the board for the two Intel chassis, one closer to the center of the board for 20-pin ATX standard power supply). <p>Ensure the Power Supply is providing at least 800mA of +5V standby current to support WOL*. If not, disable WOL via the Server Board jumper but you will not be able to utilize EMP.</p>
System will not boot from the N440BX Server Board Resource CDROM	Incorrect BIOS Boot priority order. Press <F2> during the server’s POST and configure in BIOS set-up.
EMP Console unable to connect with the N440BX/T440BX based server system	Ensure Service Pack 3 was re-installed after installation of EMP Console utility if using Windows NT 4.0 Workstation.
Other	For further support information, check http://support.intel.com/support/motherboards/server/n440bx or http://support.intel.com/support/motherboards/server/t440bx