# CUBIX

## Customer Service Support System

# IES System Documentation

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Chapter 1
Introduction

## Chapter 1 - Overview

The Cubix Intelligent Environmental Sensor (IES) Supervisory System provides supervisory control and environmental monitoring functions for Cubix BC Series processors and Cubix subsystem products. These management features are not available with ordinary PC platforms.

The IES control and monitoring functions are available to the user through the BCVision software provided with the IES Supervisory System. The IES Supervisory System also provides support for the optional Cubix Management System (CMS), which is a Windows-based application that manages all Cubix devices installed on a network. In addition, support for the industry standard Simple Network Management Protocol (SNMP) is integrated into the IES Supervisory System, making it possible to perform the IES functions from any SNMP console on the network.

The IES Supervisory System provides an alarm function. When a fault condition is detected it is conveyed by the IES System in three ways:

* The operator is notified by a sounding speaker and LED display on the system at fault.

* An alarm window is displayed by BCVision for user acknowledgment.

* A standard SNMP trap is sent to CMS and to any other SNMP application configured to manage the IES System.

The functions provided by the Cubix IES Supervisory System are divided into three categories: Subsystem functions, BC functions, and disk drive functions.

- A Cubix subsystem is an enclosure such as an ERS/FT II containing BC Series processors, or a SafeStor/FT II containing up to 12 SCSI hard drives to provide data storage for the processors. Up to 31 subsystems, each containing up to eight BC processors or twelve SCSI drives, may be controlled by a single IES Supervisory System. For more information on subsystems, refer to the Overview section in the appropriate subsystem User's Guide.

## Subsystem Functions

These functions provide environmental monitoring for each Cubix subsystem installed with the IES Supervisory System. Different subsystems support different options as illustrated in Table 1-1.

### Voltage Monitoring

The +12, +5, -12, and -5 voltages are monitored. An alarm is generated if any voltage reading is out of range.

NOTE! The SafeStor/FT subsystem does not support -12 and -5 Voltages. Instead, the amount of power being drawn on the +5 and +12 Volt buses is monitored.

### Temperature Monitoring

The temperature of the subsystem is monitored. An alarm is generated if the temperature exceeds a user determined threshold.

### Power Supply Monitoring

This monitoring is intended for use in Cubix Fault Tolerant subsystems with redundant power supplies. The IES Supervisory System monitors the supplies and generates an alarm if a supply fails.

## Fan Monitoring

Fan rotation is monitored and an alarm generated if a locked rotor is detected.

### Fuse or Electronic Circuit Breaker Monitoring

Cubix subsystems may be equipped with a +5 volt fuse on each slot of the backplane, as well as a keyboard fuse and floppy drive fuse. The IES Supervisory System will monitor these fuses and generate an alarm if a fuse fails. Additionally, some Cubix subsystems are equipped with electronic circuit breakers for each slot group rather than individual slots. For more information, refer to the section on *Setup* in *Chapter 3*.

**Table 1 - 1**
**IES Environmental Options Table**

NOTE: Systems constructed before this document's release date may not support all options listed.

## BC Functions

The BC functions apply to each BC Series processor board installed in a Cubix subsystem controlled by the IES Supervisory System. These functions include:

### Cubix Processor Recovery (CPR)

The CPR function provides automatic hard reset recovery for lock ups of the BC Series processors.

Misbehaved software or noisy phone line transmissions can "lock up" BC Series processors functioning as remote communication host processors or application servers. Often, performing a soft reset using either the <Ctrl><Alt><Del> keystroke combination or a software management application is insufficient to recover the processor.

The BC Series processors may be configured to execute a hard reset upon loss of the carrier signal, which resolves many remote communication lock up problems. The user simply breaks the remote connection and the BC processor resets. However, this solution is only valid if the user has control of the communication port on the BC processor.

For installations where the reset on loss of carrier function is not available or does not provide an adequate solution, a locked processor is only recoverable when someone performs a hard reset of the processor by cycling its power or pressing its reset button. This is a source of considerable inconvenience and aggravation on large networks where no one has immediate access to the failed processor. The CPR function resolves this problem by performing hard resets automatically, with no operator intervention.

### Reset on Demand

The ability to perform a hard reset of BC Series processors on operator demand is also provided.

### Modify Description for BC Processor

BC Vision provides a description field in which you may enter a name or description for each BC processor. The "Modify Description" option allows you to change the name or description of each processor.

### Processor Online/Offline

This feature is referred to as "pending offline" and enables BC Series processors to be held offline or placed online. A processor may also be instructed to go offline the next time it is reset-a useful feature when scheduled maintenance is required.

NOTE: BCVision automatically checks the Description field for a BC Supervisor. To prevent the BC Supervisor from inadvertently being placed offline or set to "Pending Offline," include the keyword "Super" (*not* case sensitive), in the **Description** field.

## Group Power On/Off

Power to the group of slots containing a BC Series processor may be powered on or off. Note that slots servicing other BC processors will not be affected. This feature is supported by the ERS/FT II subsystem only.

## Processor Monitoring

The IES Supervisory System continually monitors the BC Series processors and displays their status as illustrated in Figure 1-1.

# SCSI Drive Functions

The SCSI drive functions apply to each SCSI drive group installed in a Cubix SafeStor/FT II subsystem controlled by the IES Supervisory System. These functions include:

## SCSI Drive Group Online/Offline

SCSI drive groups may be placed online or held offline. The ability to place one or more drive groups offline is useful when scheduled maintenance is required.

## Modify Description for Drive Group

BCVison provides a Description field in which you may enter a name or description for each SCSI drive group. The "Modify Description" option allows you to change the name or description of each SCSI drive group. See the **SCSI Drives Status Screen** section in Chapter 3 for instructions.

**SCSI Drive Group Monitoring**

The IES Supervisory System continually monitors the SCSI drive groups and displays their status as illustrated in Figure 1 - 2.

# System Components

The IES Supervisory System consists of the following components:

* One IES installed in each Cubix subsystem to be controlled by the IES Supervisory System

* One BC Supervisor consisting of BCVision and SNMP support software (optional) installed on a BC processor

* Out-of-band Cubix Data Highway

* Control software

* Operating System and Network Environment software

**IES Module**

The IES module performs all environmental monitoring, causing an alarm in the event of a fault, monitoring BC processor and SCSI drive status, and performing a hard reset of any BC processor installed in the subsystem in the event of a failure. The sounding of a speaker and illumination of LEDs on the IES module indicate an alarm condition.

The IES module is integrated into the ERS/FT II subsystem. For the ERS II and the SafeStor/FT subsystems, the IES is only included if specified when the system is ordered. For all other subsystems, and if you chose not to order the ERS II or SafeStor/Ft with the IES option, an IES module must be installed.

**BC Supervisor**

One BC processor in the IES Supervisory System must run the application program BCVision, which supervises the system. This BC processor is referred to as the BC Supervisor and must be equipped with a minimum of 4MB of RAM. One BC Supervisor can control up to 31 Cubix subsystems, with up to 8 BC processors per subsystem or 12 SCSI drives per SafeStor/FT II. Each subsystem to be supervised must be equipped with an IES.

BCVision is a DOS-based application that provides the user interface for the IES Supervisory System. Through BCVision, the user is able to configure, monitor, and control the status of the BC processors and the subsystems in which they are installed. BCVision will also alert the user in the event of an alarm condition.

Because BCVision has been instrumented for SNMP, the monitoring and control functions included in BCVision are also available from any SNMP-compliant management console. Alarm conditions detected by BCVision are available to the management console via SNMP traps. BCVision must be running to provide SNMP support. Note that this necessitates that the BC Supervisor be a dedicated processor on systems with continual SNMP management requirements. The BC Supervisor must be a Cubix BC 3035, 4035, 4045, or 5xxx product. Do not use BC 3030 or 4030 boards.

## Data Highway

A Cubix Data Highway connects each IES to the BC Supervisor. Because this out-of-band highway is used by the IES Supervisory System rather than the network, the system is truly network independent. In fact, BCVision requires no network connection at all unless support for a SNMP management package is needed.

## Control Software

The IES Supervisory System includes the BCMaster TSR (Terminate-and-Stay-Resident), which must be installed on the BC Supervisor. BCMaster handles all Cubix Data Highway communications and is provided with the IES Supervisory System software.

In addition, control software is required on each processor to be supervised by the system. This software is located on the *BC Series Installation Diskette* provided with the BC Series processors.

## Operating System and Network Environment

The Microsoft DOS operating system (version 5.00 or higher) must be installed on the BC Supervisor.

To provide SNMP support, Novell's SNMP agent must be installed with other Novell software required to convert the BC Supervisor into a network node. A network interface controller (NIC) and appropriate driver are also required. This configuration provides SNMP support for IPX/SPX networks.

For TCP/IP network support, a TCP/IP protocol stack must be loaded with the Novell network software. The Novell LAN Workplace for DOS product provides an appropriate TCP/IP stack for this environment. Note, however, that installing Novell software on the BC Supervisor does not mandate that the BC Supervisor be installed on a Novell network.

| Option | ERS/FT II | ERS II | ERS/FT | ERS | BOS | SafeStor |
|---|---|---|---|---|---|---|
| Power Supply #1 | + | + | + | | + | + |
| Power Supply #2 | + | | + | | | + |
| Lock Rotor Fan #1 | + | + | + | | + | + |
| Lock Rotor Fan #2 | + | + | + | | | + |
| +5 Volt Slot Fuses | + | | + | | | |
| +5 Volt Group Circuit Breakers | + | | | | | |
| Floppy Fuse | + | + | + | | | |
| Keyboard Fuse | + | + | + | | + | |
| +5 Voltage Level | + | + | + | + | + | + |
| +12 Voltage Level | + | + | + | + | + | + |
| -5 Voltage Level | + | + | + | + | + | |
| -12 Voltage Level | + | + | + | + | + | |
| Internal Temperature | + | + | + | + | + | + |
| +5V Power Consumption | | | | | | + |
| +12V Power Consumption | | | | | | + |

| Maximum BC Processors Monitored | 8 | 8 | 8 | 8 | 5 | 0 |
|---|---|---|---|---|---|---|
| Maximum SCSI Drives Monitored | 0 | 0 | 0 | 0 | 0 | 12 |

# Chapter 2
# Installation

This chapter describes installation of the software components included in the IES Supervisory System. Prior to performing software installation, an IES should be installed in each Cubix subsystem and connected to the BC Supervisor via the data highway. If the subsystem to be controlled by the IES Supervisory System is a Cubix ERS II or ERS/FT II, refer to the *Series II Subsystem User's Guide* for hardware installation instructions. If it is a SafeStor/FT II refer to the *SafeStor/FT II User's Guide*. Otherwise, refer to the *IES Module Hardware Installation Guide*.

The IES Supervisory System software is provided on a 3.5" high density diskette.

The following software applications are provided:

**BCVISION.EXE** Must run on the BC Supervisor to provide a user interface for the IES Supervisory System. Also provides CMS support and SNMP instrumentation.

**BCVISION.DAT** Support file for BCVision.

**BCVISION.HLP** Support file for BCVision.

**BCMASTER.EXE** Must run on the BC Supervisor to provide data highway communications.

**IESFRMWR.BIN** Support file that contains the software which will be downloaded and run on each IES.

Three Management Information Bases (MIBs) are also provided for use by CMS and other SNMP-compliant network management systems:

```
BC.MIB

IES.MIB
```

In addition, the following Novell files provide network communications and SNMP support. They must be installed on the BC Supervisor per the following instructions:

```
LSL.COM
IPXODI.COM or TCPIP.EXE
VLM.EXE
WSSNMP.VLM
WSTRAP.VLM
WSREG.VLM
WSASN1.VLM
MIB2IF.VLM
MIB2PROT.VLM (required for TCP/IP installations  only)
STPIPX.COM or STPUDP.COM
```

## Installation Instructions

**1. If the subsystem to be controlled by the IES Supervisory System was not already equipped with an IES Supervisory System, install the IES hardware module. If the subsystem is an ERS II, refer to the installation instructions in the *Series II Subsystem User's Guide*. If a SafeStor/FT, refer to the *SafeStor/FT User's Guide*. Otherwise, refer to the *IES Module Hardware Installation Guide.* Repeat this procedure for each subsystem to be connected to the IES Supervisory System.**

**2. Connect the Cubix Data Highway to each subsystem with an IES. If an ERS II or an ERS/FT II, refer to the installation instructions in the *Series II Subsystem User's Guide*. If the subsystem is a SafeStor/FT, refer to the *SafeStor/FT User's Guide*. Otherwise, refer to the *IES Module Hardware Installation Guide*.**

**3. Connect the BC Supervisor to the Cubix Data Highway. If the subsystem containing the BC Supervisor is an ERS II or an ERS/FT II, refer to the installation instructions in the *Series II Subsystem User's Guide*. Otherwise, refer to the *IES Module Hardware Installation Guide*.**

**4. Make a backup copy of the *IES Supervisory System Diskette*. Use this copy during installation, storing the original in a safe place.**

**5. Install the control software on each BC processor excluding the BC Supervisor. The software to be loaded depends upon the operating system installed on the BC as the following list indicates:**

**DOS Load the BCSETUP.SYS device driver**

**OS/2 Load the BCSETOS2.SYS device driver**

**NetWare Load the BCACTIVE.NLM NetWare Loadable Module**

WINNT Load the BCACTVNT.SYS device driver

The control software is located on the *BC Series Installation Diskette*. Installation instructions are included in the *BC Series Software Installation Guide.*

WARNING! The control software must be loaded on each BC processor connected to an IES before the automatic Cubix Processor Recovery (CPR) function is enabled. Once CPR is enabled, the IES resets any BC processor that is *not* running BCSETUP.SYS, BCSETOS2.SYS, BCACTIVE.NLM, or BCACTVNT.SYS.

6. On the BC Supervisor, copy the following files from the *IES Supervisory System Diskette* onto the processor's boot disk.

```
BCMASTER.EXE
BCVISION.EXE
BCVISION.DAT
BCVISION.HLP
IESFRMWR.BIN
```

7. If the BC Supervisor is to support network communications, copy the appropriate network driver onto the boot disk. While usually desired, network communications are not required by BCVision except to provide CMS and/or SNMP support.

8. If the IES Supervisory System is to be managed by CMS or another SNMP-compliant management application, SNMP support must be installed. To provide SNMP support for the IPX network communication protocol, follow the *IPX Installation* instructions in this chapter. To provide SNMP support for TCP/IP, follow the *TCP/IP Installation* instructions. Installation of SNMP support is optional.

9. Verify that all BC Series processors attached to an IES are running with the appropriate control software (BCSETUP.SYS, BCSETOS2.SYS, BCACTIVE.NLM, or BCACTVNT.SYS).

10. Run BCVision on the BC Supervisor as described for the protocol installed in the *IPX Installation* and *TCP/IP Installation* sections. Select OK in response to the Password prompt (no password is required until one is configured).

11. Configure the first subsystem connected to the BC Supervisor via the Cubix Data Highway. Select the Setup option from the Functions Menu. When prompted for the data highway identification number, enter the number (1 to 31) set during the hardware installation on the IES in the subsystem being configured. Depending upon the type of subsystem monitored by the specified IES, one of the screens illustrated in Figures 2 - 1 through 2 - 3 will be displayed.

NOTE: If BCVision cannot communicate with the desired IES, verify that the IES is connected to the Cubix Data Highway.

12. If the subsystem being configured is a Cubix ERS/FT II, Figure 2 - 1 is displayed. The Backplane Configuration section is used to indicate the groups in use, where "C" represents the Custom Channel

on the ERS/FT II multiplexor. The groups designated with an up-arrow correspond to groups that contain BC processors and are connected to the multiplexor. These fields cannot be modified. Proceed to step 13.

If the subsystem is a Cubix SafeStor/FT, Figure 2 - 2 is displayed. The backplane configuration is indicated in the SCSI Drive Groups display. The groups indicated as "in use", correspond to groups containing SCSI drive adapters. These fields cannot be modified. Proceed to step 13.

- **If Figure 2 - 3 is displayed, follow the steps 12a and 12b:**

12a. Specify as the Subsystem Type. The subsystem type should appear on the front of the subsystem enclosure. Select the subsystem type from the list displayed.

12b. Specify the Backplane Configuration. Proper configuration of this field is based upon the type of subsystem. If the subsystem is a Cubix Branch Office System (BOS), mark the first five groups as "in use." Otherwise, this field defines the backplane configuration of the subsystem. Each subsystem may contain up to eight groups; therefore, the multiplexor in the subsystem contains eight sets of connectors (one for each possible group). Specify as "in use" the groups which correspond to the multiplexor connectors attached to a BC processor.

Refer to the explanation of the Setup function in the *BCVision* chapter for more information.

13. Verify the other configuration fields. Be aware that in the ERS, ERS/FT, and BOS subsystems, only lock rotor fans can be monitored. Since lock rotor fans are not always installed, the number of fans will default to zero in these subsystems. Change this number to reflect the number of lock rotor fans in the subsystem, if necessary. Note *that the ERS II, ERS/FT II, and SafeStor/FT subsystems are equipped to monitor both lock rotor and non-lock rotor fans.*

14. Each IES that has been configured will be displayed on a screen similar to Figure 2 - 4. Repeat steps 11 through 13 for each subsystem connected to the IES Supervisory System that is not displayed on this screen.

If an IES indicates a fault condition to the IES Supervisory System, the IES is displayed in red on this screen. To view the specific alarms causing a fault condition, use the arrow keys to highlight the red IES, and select the View IES Detail option from the Functions Menu. The current alarms for this IES will be displayed.

15. If CMS is not installed, select the Set SNMP Status Trap Rate option from the Supervisor Menu. Specify a refresh rate of zero. This disables the status trap intended for CMS from being generated by the BC Supervisor. If CMS is installed, do not set this rate to zero.

16. If desired, enter an appropriate name or description for each IES. Use the arrow keys to highlight the IES to be named, and select the View IES Detail option from the Functions Menu. To name or describe the highlighted IES you may enter up to 31 alphanumeric characters in the Description field.

**NOTE:** When naming the BC Supervisor include the keyword "Super" (case insensitve), in its Description field. BCVision automatically checks the Description field for this keyword and when found, prevents the processor from being placed offline.

17. If desired, synchronize the date and time in all of the subsystems with the date and time of the BC Supervisor. Select the Mark All option from the Functions Menu. Then select the Set Date and Time option from the same menu.

**NOTE:** This feature is supported only if the IES in the subsystem contains a real time clock. An error message will be generated for each IES that does not support this feature. This error message may be ignored.

18. If desired, enable the Cubix Processor Recovery (CPR) automatic reset function on some or all of the BC processors installed in each subsystem:

Use the arrow keys to select the IES associated with the desired subsystem and press <Enter>. The BC Status Screen will be displayed.

If CPR is to be enabled on all BC processors displayed, select Mark All from the Functions Menu. Otherwise, mark the desired processors. Use the arrow keys to highlight the BC to be marked, and press the <Space Bar>. Marked processors are indicated by a background color of dark blue. To unmark a BC processor, press the <Space Bar> again. Once all of the desired BC processors are marked, select Enable CPR from the Functions Menu. The change in CPR configuration will be reflected in the CPR column on the BC Status Screen.

Press <Esc> to return to the IES Status Screen.

Repeat these steps for each IES containing BC processors requiring CPR configuration.

**WARNING!** The control software must be loaded on each BC processor connected to an IES before CPR is enabled. Once CPR is enabled, the IES will reset any BC processor that is not running BCSETUP.SYS, BCSETOS2.SYS, or BCACTIVE.NLM.

19. Protect BCVision from unauthorized use by configuring a password. Select Set Password from the Supervisor Menu, and enter the password. The password will not be displayed on the screen. Enter the same password a second time for verification.

**WARNING!** Once a password is specified, BCVision will require the user to enter this password each time that BCVision is invoked. If the password is not entered correctly, BCVision will not run.

20. The system is now installed and configured. For more information on BCVision functions, refer to the *BCVision* chapter.

21. If desired, you may check the configuration for each subsystem and view the associated status screen. Use the arrow-keys to select the IES and press <Enter> to display the status screen.

For example, if checking the SafeStor/FT configuration. Use the arrow-keys to select the IES labeled "SafeStor" in the Subsystem field and press <Enter>. The SCSI Drive Status screen appears. Press <Esc> to toggle back to the IES Modules screen.

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# IPX Installation

To configure IPX support on the BC Supervisor requires two products from Novell:

* Requester for DOS - provides IPX support

* Desktop SNMP v1.1 or higher - provides SNMP support

On the BC Supervisor workstation, install the Requester for DOS and Desktop SNMP. Several files plus those below are placed on the BC Supervisor's disk drive. If using a Cubix hard disk drive pre-loaded with BCVision, the files within brackets are already installed on the disk.

```
LSL.COM
IPXODI.COM
[VLM.EXE]
[WSSNMP.VLM]
[WSTRAP.VLM]
[WSREG.VLM]
[WSASN1.VLM]
[MIB2IF.VLM]
[STPIPX.COM]
```

These Cubix files should already be installed:

```
BCMASTER.EXE
BCVISION.EXE
BCVISION.DAT
BCVISION.HLP
IESFRMWR.BIN
```

Once all files are in place, append the following sections to the NET.CFG file created by the Requester for DOS installation:

NetWare DOS Requester

```
USE DEFAULTS = OFF
VLM = WSSNMP.VLM
VLM = WSTRAP.VLM
```

```
VLM = WSREG.VLM
VLM = WSASN1.VLM
VLM = MIB2IF.VLM
```

**Desktop SNMP**

```
enable monitor community = any
monitor community = "public"
enable control community = specific
control community = "public"
enable trap community = specific
trap community = "public"
sysName = "IES Supervisory System v1.20"
sysLocation ="Company.City.Department"
sysContact = "Administrator 123.456.7890"
snmpEnableAuthenTraps = on
```

**Transport Provider IPX**

```
trap target = 00001234:000012345678
```

**Where trap target must be the IPX address of the device that will receive the traps from BCVision. If CMS is installed, the trap target must be set to the address of the CMS console (more information on CMS installation).**

**The parameters sysName, sysLocation and sysContact are optional fields that may be included for display purposes.**

**To invoke BCVision using the IPX protocol, load the following programs in this order:**

```
LSL.COM
<DRIVER.COM>
IPXODI.COM
VLM.EXE
STPIPX.COM
BCMASTER.EXE
BCVISION.EXE
```

**Where <DRIVER.COM> is the network adapter driver for the adapter installed. The Management Console (identified as the trap target) will receive traps from BCVision if fault conditions exist. A SNMP browser may be used to supervise the IES System by compiling it with the Cubix MIBs (BC.MIB and IES.MIB).**

# TCP/IP Installation

**TCP/IP support on the BC Supervisor requires two Novell products:**

**! Novell's LAN Workplace for DOS - provides TCP/IP transport protocol support. The TCP/IP transport protocol may be used exclusively (without IPX/SPX protocol support) if both the BC supervisor and the SNMP-compliant console are properly configured.**

**! Desktop SNMP v1.1 or higher - provides SNMP support.**

**On the BC Supervisor workstation, install the LAN Workplace for DOS and Desktop SNMP. Many files plus those below are placed on the BC Supervisor's disk drive:**

```
LSL.COM
TCPIP.EXE
VLM.EXE
WSSNMP.VLM
WSTRAP.VLM
WSREG.VLM
WSASN1.VLM
MIB2IF.VLM
MIB2PROT.VLM
STPUDP.COM
```

**These Cubix files should already be installed:**

```
BCMASTER.EXE
BCVISION.EXE
BCVISION.DAT
BCVISION.HLP
IESFRMWR.BIN
```

**Once all files are in place, append the following sections to the NET.CFG file created by the LAN Workplace for DOS installation:**

**NetWare DOS Requester**

```
USE DEFAULTS = OFF
VLM = WSSNMP.VLM
VLM = WSTRAP.VLM
VLM = WSREG.VLM
VLM = WSASN1.VLM
VLM = MIB2IF.VLM
VLM = MIB2PROT.VLM
```

**Desktop SNMP**

```
enable monitor community = any
monitor community = "public"
enable control community = specific
control community = "public"
enable trap community = specific
trap community = "public"
sysName = "IES Supervisory System v1.20"
sysLocation ="Company.City.Department"
sysContact = "Administrator 123.456.7890"
snmpEnableAuthenTraps = on
```

**Transport Provider UDP**

```
trap target = 123.45.678.90
```

**Where trap target must be the IP address of the device that will receive the traps from BCVision. The parameters sysName, sysLocation and sysContact are optional fields that may be included for display purposes. Also, note that the LAN Workplace for DOS TCP/IP transport protocol uses the Ethernet_II frame type. If any other frame types are desired (i.e. Ethernet_802.3), add them to the Link Driver section of the NET.CFG file.**

**To invoke BCVision using only the TCP/IP protocol, load the following programs in this order:**

```
LSL.COM
<DRIVER.COM>
TCPIP.EXE
VLM.EXE
STPUDP.COM
BCMASTER.EXE
BCVISION.EXE
```

**Where <DRIVER.COM> is the network adapter driver for the adapter installed. The Management Console (identified as the trap target) will receive traps from BCVision if fault conditions exist. A SNMP browser may be used to supervise the IES System by compiling it with the Cubix MIBs (BC.MIB and IES.MIB).**

**If the management system in use is Novell's NMS, TCP/IP support must be installed with IPX support (Novell's NMS requires IPX support). To add TCP/IP support, install the LAN Workplace for DOS software on the NMS Console. Run the NMS setup utility and add TCP/IP support, specifying the TCP/IP software added by LAN Workplace for DOS.**

# Chapter 3
# BCVision

BCVision provides the user interface for the IES Supervisory System as well as an interface to the Cubix Management System (CMS) and other SNMP-compliant network management applications. To function, the BCVision software must be run on a BC processor attached to the Cubix data highway, which connects the processor to up to 31 Cubix subsystems. This processor is referred to as the BC Supervisor.

In installations equipped with CMS or another SNMP management system, the BC Supervisor should be dedicated to running BCVision. This ensures that alarms are reported to the SNMP system at the time they occur. It also makes IES Supervisory System information available to the management console.

In installations **not** equipped with CMS or another SNMP management system, dedicating the BC Supervisor to running BCVision is still recommended. A monitor should also be dedicated to the BC Supervisor, and this monitor should be placed in a location visible to the network administrator. This allows alarms displayed by BCVision to be reported to the administrator at the time they occur.

If BCVision is not running on the BC Supervisor, SNMP support is disabled. Since CMS uses SNMP for its network communications, CMS will not be able to manage this IES Supervisory System. No IES Supervisory System information or alarms will be reported to the SNMP management system until BCVision is invoked. However, each IES continues to perform the monitoring and control functions, even when BCVision is not running. Therefore, all IES Supervisory System functions are still performed, including monitoring the subsystem environment and performing the CPR function (if enabled). If an alarm occurs, the speaker will sound and a LED will be illuminated. The next time BCVision is invoked alarms will be displayed (and SNMP traps generated) for any faults that occurred while BCVision was not running.

To run BCVision, the files BCVISION.DAT, BCVISION.HLP, and BCMASTER.EXE must reside in the same directory as BCVISION.EXE. These files are usually installed on the hard drive of the BC Supervisor, although they may be run from a network file server or floppy drive. The BCMaster TSR must be loaded before BCVision is invoked.

It is recommended that BCVision automatically execute each time the BC Supervisor is booted. This requires adding the following lines to the AUTOEXEC.BAT file:

```
bcmaster
```

```
bcvision
```

**NOTE**: If network communications are required, VLM.EXE must be executed before BCMASTER.EXE is loaded.

These commands may alternatively be entered at the DOS command line. Remember the loading order described in Chapter 2:

```
LSL.COM
<DRIVER.COM>
<IPXODI.COM> or <TCPIP.EXE>
VLM.EXE
<STPIPX.COM> or <STPUDP.COM>
BCMASTER.EXE
BCVISION.EXE
```

If network communications and SNMP support are not required, only BCMASTER.EXE and BCVISION need to be invoked.

## Password

Before you are allowed to access any BCVision functions, a screen similar to the one illustrated in Figure 3-1 is displayed.

BCVision will not require a password until one is configured.

## IES Status Screen

Once an appropriate password has been entered, BCVision will display a status screen similar to the one illustrated in Figure 3-2. This screen displays each IES found on the Cubix data highway. However, if this is the first time BCVision has been invoked, no IES will be listed. The user is required to configure each IES through BCVision before it appears on this display.

The bottom line of the display provides a quick reference of available functions.

To configure an IES not listed on the display, run the **Setup** option as described in the **Functions Menu** section of this chapter.

The screen displays the subsystem in which the IES is installed, the data highway ID of each IES found, the temperature of the subsystem containing each IES, the current voltages of each subsystem, and a description associated with each IES.

The **ID** refers to the data highway identification of each IES as determined by a hardware switch setting. If the subsystem is an ERS/FT II, the switch is located on the subsystem. Otherwise, the switch is located on the IES module itself. These ID numbers must be unique.

The **temperature** is displayed in degrees Celsius and reflects the temperature of the subsystem in which the IES is located.

The +12, -12, +5, and -5 **voltages** are displayed. These values reflect the voltage levels on the bus in the subsystem containing the IES.

**NOTE**: Since SafeStor/FT does not support -12V or -5V levels, these values are shown as "N/A."

The **Description** is a user defined text description and may contain up to thirty-one characters to describe the IES or subsystem in which the IES resides.

If a fault condition exists in a subsystem, the corresponding IES displays in red. The active alarms on an IES are listed on the IES Detail Display, which is accessible from the **Functions Menu**.

From the IES Status Screen, the following functions are available:

```
* Exit BCVision

* Help

* Mark

* Access Menu Options
```

**Exit BCVision**

To exit BCVision, press **<Alt>+<F4>** or exit through the **File Menu**.

**Help**

Press **<F1>** to view help information describing BCVision.

**Mark**

Some **Functions Menu** options operate on Intelligent Environmental Sensors (IES) that are "marked". To mark a sensor, use the arrow keys to highlight the IES to be marked, and press the **<Space Bar>**. If an alarm

condition exists, a marked IES displays on a black background. If not, it displays on a dark blue background. To unmark an IES, press the **<Space Bar>** again. The color returns to its previous state.

**Functions Menu** operations may be performed on multiple subsystems simultaneously. This is achieved by marking each IES to which the function applies then executing the function. For example, assume that all sensors are marked and the maximum temperature threshold is set to 60 degrees. The new threshold will be applied to all of the sensors, causing BCVision to generate a temperature alarm only if the temperature in one of the subsystems exceeds 60 degrees Celsius.

The ability to **Mark All** sensors is available under the **Functions Menu**. This is a convenient way of performing a single function for all of the subsystems in the IES Supervisory System.

**Access Menu Options**

The following keystrokes will provide access to the main menu options:

**Alt** Pressing this key moves the cursor to the menu bar. Arrow keys may then be used to select a menu option.

**Alt+F** Pressing the "F" key while holding the <Alt> button accesses the **File Menu**.

**Alt+S** Pressing the "S" key while holding the <Alt> button accesses the **Supervisor Menu**.

**Alt+N** Pressing the "N" key while holding the <Alt> button accesses the **Functions Menu**.

**Alt+H** Pressing the "H" key while holding the <Alt> button accesses the **Help Menu**.

# File Menu

The **File Menu** allows the user to exit BCVision and return to DOS. Press **Esc** to exit the menu.

# Supervisor Menu

The options available from the **Supervisor Menu** include:

```
* Set Password

* Enable/Disable Confirmation

* Enable/Disable SNMP Support
```

```
* Enable/Disable Alarm Notification

* Set Refresh Rate

* Set SNMP Status Trap Rate
```

Press **Esc** to exit the menu.


**Set Password**


Use the **Set Password** option to create or modify a BCVision password.


Prompts to enter existing and new passwords are displayed. This added layer of security prevents unauthorized users from modifying the system password. Enter the current password if one exists.


Enter the new password. Verify the new password by entering it a second time. Once the same password is entered twice, it becomes the new BCVision password.


A password may contain any printable ASCII character (20 - 7F hexadecimal), and are not case sensitive: "a" is interpreted to be the same as "A".


**Enable/Disable Confirmation**


Throughout BCVision, execution of any critical function is preceded by a confirmation message. For example, if a user instructs BCVision to reset a BC processor, BCVision displays a message requesting the user to verify that the reset is to be performed before the command is actually executed. This allows the user to prevent accidental functions from disrupting the system.


Functions protected with the confirmation message include:

```
* BC processor reset

* Placing BC processors online

* Placing BC processors offline

* Clearing the reset counters

* CPR Enable/Disable

* Pending Offline Enable/Disable

* Group Power ON/OFF
```

Confirmation messages may be enabled or disabled within BCVision. To enable or disable the confirmation messages, select the **Enable/Disable Confirmation** option from the **Supervisor Menu**.

**Enable/Disable SNMP Support**

With SNMP support enabled, BCVision attempts to locate an SNMP agent on the workstation. If BCVision does not find a SNMP agent, an error message is displayed. If SNMP support is not required, the support can be disabled and the error will be avoided.

SNMP support is enabled by default after initial installation of the IES Supervisory System. Therefore, the SNMP error message may occur the first time BCVision is run, but will not occur after SNMP support is disabled.

To enable or disable SNMP support, select the **Enable/Disable SNMP Support** option from the **Supervisor Menu**.

**Enable/Disable Alarm Notification**

BCVision provides an Enable/Disable capability for system alarms that can be used to enable or disable alarm notification messages. While disabling alarm notification turns off warning messages at the IES supervisory level, it does not disable alarms to other management systems such as CMS.

To enable or disable alarm notification, select the **Enable/Disable Alarm Notification** option from the **Supervisor Menu**. With alarm notification **enabled**, any of the following conditions generate an audible alarm, illuminate the appropriate LED, and display a message on the BCVision console.

```
* IES communication failure

* temperature threshold exceeded

* voltage threshold exceeded.

* fan failure

* power supply failure

* nonfatal POST test failure

* bus terminator is installed backwards

* auto-configuration failure

* power down test failure
```

If the alarm notification feature is **disabled**, the message "Alarms Disabled" appears and remains in the lower right corner of the console screen. To close a Warning Screen, BCVision provides three options: "Acknowledge," "Disable Notification," or "OK." "Acknowledge" closes the warning screen and enables the system to continue alarm notification whenever an alarm condition occurs. "Disable Notification" closes the warning screen, displays the "Alarms Disabled" message, and prevents further alarm notifications. If at a later time, you want to enable notification, use **Enable/Disable Alarm Notification** from the **Supervisor**

**Menu**. Some warning screens provide an "OK" option only. Clicking on the **OK** button or pressing **<Enter>** implies acknowledgment and the system continues in the same manner as when Acknowledge is selected.

**Set Refresh Rate**

The refresh rate determines how often BCVision polls each IES over the data highway. The rate at which the BCVision display is refreshed is also set to this value.

To modify the refresh rate, select **Set Refresh Rate** from the **Supervisor Menu**. The rate may range from 1 to 60 seconds. The default is two seconds.

**Set SNMP Status Trap Rate**

If a trap target address was configured in the NET.CFG file on the BC Supervisor during installation, BCVision periodically generates a standard SNMP trap to the specified address. This trap is intended for receipt by a CMS console. If CMS is not installed, set the SNMP Status Trap Rate to zero.

NOTE! If CMS is installed, changing the SNMP Status Trap Rate is *not* recommended. If heavy network traffic conditions necessitate changing the trap rate to a period longer than 30 seconds, the trap interval must be changed in CMS as well. This function is provided under the CMS Server, which is installed on the CMS console.

# Functions Menu

The options available from the **Functions Menu** include:

```
* Set Poll Interval

* Set Reboot Timeout

* Set Temperature Threshold

* Set Date and Time

* View IES Detail

* View BC Processors

* View SCSI Drives

* Setup
```

* Scan Data Highway

* Mark All

The first three menu items (**Set Poll Interval**, **Set Reboot Timeout**, and **Set Temperature Threshold**) will apply to all marked sensors. If no IES is marked, the function will be performed on the currently highlighted IES.

Press **Esc** to exit the menu.

**Set Poll Interval**

To monitor their status, the IES is constantly polling each BC Series processor in the subsystem. This is accomplished by generating an interrupt on the BC processor once per "poll interval". The default poll interval is one second, which is unnoticeable in most applications.

If an application is running on the BC Series processor which keeps interrupts disabled for more than one second, the IES detects a processor failure. If CPR is enabled, the IES resets the processor. Otherwise, it displays this processor as "Inactive" on the BC Status Screen.

In installations where interrupts are disabled for unusual amounts of time (more than one second), use the **Supervisor Menu's Set Poll Interval** option to extend the poll interval used by the IES. The new poll interval is assigned to all marked sensors. If no IES is marked when this menu item is invoked, the new poll interval is set for the currently highlighted IES only. The interval may range from 1 to 60 seconds.

**Set Reboot Timeout**

If a BC processor fails to respond to a request by the IES, the IES assumes that the BC processor has been reset. The IES will wait the amount of time specified by the "reboot timeout" for the processor to reboot and load the BC control software (BCSETUP.SYS, BCSETOS2.SYS, or BCACTIVE.NLM). After this time period, if CPR is enabled and the device is still not responding, the IES will reset the processor. The default reboot timeout is 60 seconds.

The observed reboot timeout is dependent upon the poll interval. After resetting a processor, the IES checks once per poll to determine if the amount of time specified by the reboot timeout has elapsed, at which time the IES will resume monitoring the activity of the BC processor. Therefore, the reboot timeout specified should be greater than the poll interval.

To modify the reboot timeout, select **Set Reboot Timeout** from the **Functions Menu**. The new reboot timeout will be assigned to all marked sensors. If no IES is marked when this menu item is invoked, the new reboot timeout is set for the currently highlighted IES only. Specify a timeout value in the range of 1 to 3600 seconds.

**Set Temperature Threshold**

Each IES constantly monitors the temperature of the subsystem in which it resides. The current temperature

is displayed on the IES Status Screen. If the temperature exceeds a maximum threshold, an alarm is generated. The default temperature threshold is 50 degrees Celsius.

To modify the maximum temperature threshold, select **Set Temperature Threshold** from the **Functions Menu**. The new threshold is assigned to all marked sensors. If no IES is marked when this menu item is invoked, the new threshold is set for the currently highlighted IES only. Specify a temperature threshold from of 1 to 70 degrees Celsius.

NOTE! BCVision observes temperature as degrees Celsius only. A degrees Celsius to degrees Fahrenheit conversion chart is available in the help system (refer to the **Help Menu**).

**Set Date and Time**

The date and time of the clock imbedded in the IES may be set to the date and time of the BC Supervisor by marking the IES and then selecting the **Set Date and Time** option. The IES clock is used to time stamp alarms. If this option is selected for an IES that does not include a real time clock, an error message will be generated. To determine the current setting of the date and time in a subsystem, refer to the IES Detail display accessible via the **View IES Detail** function.

**View IES Detail**

You may view information describing each IES on the IES Status Screen. The IES Detail Display may be accessed from the **Functions Menu** or by using the **<Alt>+V** hot key sequence. The IES for which the Detail Display is generated is always the IES that is currently highlighted. Figure 3-3 provides a sample IES Detail Display screen.

This screen displays IES conditions at the time the screen is invoked. The information displayed is static. To update the screen, exit by selecting the **OK** or **Cancel** button, and request to view the IES again.

The fields displayed include:

* The **Data Highway ID** of the IES as determined by its switch settings.

* The **Description** field, which may be modified from this screen.

* The current **Date and Time** of the real time clock (supported only if a clock is imbedded in the IES).

* The current +12, -12, +5, and -5 **Voltages** for the subsystem containing the IES.

**NOTE**: The SafeStor/FT subsystem does not support -12 and -5 Voltages. Instead, the amount of power being drawn on the +5 and +12 Volt buses is displayed.

* The subsystem's current **Temperature** (in degrees Celsius).


* The **Maximum Temperature Threshold**. When this threshold is exceeded an alarm is generated by the IES Supervisory System. The user may modify this threshold via the **Functions Menu**.


* The **Reboot Timeout**, which is the amount of time that the IES will wait for a BC processor to boot. If the BC processor does not go active within this interval, the IES will generate an alarm. The user may modify this threshold via the **Functions Menu**.


* The **Poll Interval**, which determines how often the IES requests information from each BC processor residing in the subsystem. The user may modify this threshold via the **Functions Menu**.


* A list of all active **Alarms**. Possible alarms include:

- IES Communication Failure
- Power Supply Failure
- Voltage Threshold Exceeded
- Fan Failure
- Slot Fuse Failure
- Temperature Threshold Exceeded
- Floppy Fuse Failure
- Keyboard Fuse Failure
- Group Power Failure


**View BC Processors**


To monitor and control the BC processors installed in a subsystem, highlight the IES in that same subsystem and select the **View BC Processors** option from the **Functions Menu** (or press **<Enter>**). The BC Status Screen will be displayed. An explanation of this screen and its functions is included in the next section of this chapter.


**View SCSI Drives**


To monitor and control the SCSI hard drives installed in the SafeStor/FT, highlight the SafeStor/FT subsystem and select the **View SCSI Drives** option from the **Functions Menu** (or press **<Enter>**). The SCSI Drives Status Screen will be displayed. An explanation of this screen and its functions is included at the end of this chapter.


# Setup


Use this function to configure each IES. The **Setup** option must be run on an IES before it will appear on the IES Status Screen. The information which is specified using this option includes:

* Data Highway Identification Number

* Subsystem Type

* Backplane Configuration

* Number of Power Supplies

* Number of Fans

* Other Miscellaneous Information (floppy power, IES speaker status, etc.)

In addition, when the Setup option is chosen, BCVision determines the validity of the software running on the IES. If no software is running on the IES, or the software is out of date, BCVision will prompt the user to transfer new software to the IES.

When prompted for the **data highway identification number**, enter the number (1 to 31) set on the hardware switch of the IES to be configured. If this IES has been configured previously, its current setup will display. Figure 3 - 4 illustrates the IES Setup Screen displayed if the specified IES is integrated into an ERS/FT II subsystem. Figures 3 - 5 through 3 -7 illustrate the setup screen for the ERS/FT II subsystem's PCI backplane configurations. Figure 3 - 8 illustrates the IES Setup Screen displayed for subsystem types other than the ERS/FT II or the SafeStor/FT. The SafeStor setup screen is illustrated in Figure 3 - 9.

If the IES specified is integrated into an ERS/FT II subsystem, the **Subsystem type** automatically sets to ERS/FT II. Otherwise, specify the **subsystem type** of the subsystem containing the IES. Options include a Cubix ERS/FT II, SafeStor, ERS/FT, ERS, a ERS II, a Cubix Branch Office System (BOS), and an "Other" option. The subsystem type should appear on the front of the subsystem enclosure.

**NOTE:** Since BCVision automatically detects ERS/FT II and SafeStor/FT subsystems and sets the **subsystem type** accordingly, the user cannot manually set the **subsystem type**.

The first time a subsystem is set up, a default configuration is displayed based upon the subsystem type.

The **Backplane Configuration** defines the segment definition of the subsystem. In ERS/FT II and SafeStor/FT subsystems, this information is detected automatically and displayed; it cannot be modified via the Setup Screen.

Backplanes in BOS, ERS II, ERS or ERS/FT subsystems **must** be configured by the user. The ERS II, ERS, and ERS/FT subsystems may contain 1 to 8 groups, or segments. Each group functions as a separate backplane. Since up to eight groups may reside in one subsystem, a multiplexor panel residing in the subsystem contains eight sets of connectors, one for each possible group. Specify which of these connectors are actually attached to a BC processor.

Mark only those positions which correspond to the physical location of the connectors in use. For example, if connectors 1 and 5 are marked under **Setup**, BCVision will view the subsystem as having two groups (Group

1 and Group 2), and the IES will attempt to communicate with the Group 1 BC processor via mux connector 1 and the Group 2 BC processor via mux connector 5.

The BOS 100 subsystem is different in that it always contains 5 groups regardless of the number of BC processors installed. This is reflected on the group selection display on the front panel of the BOS, which cycles through groups 1 to 5. To properly set up a BOS, mark the first five physical groups in use. This allows the BCVision group representation to match the BOS subsystem's panel display. If a group does not contain a BC processor, the BC Status Screen will display it as "Not Attached".

Specify the **number of power supplies** that are monitored by the IES. Only Cubix manufactured power supplies may be monitored by the IES. Table 1-1 indicates which subsystems contain supplies that can be monitored. ERS/FT systems may optionally contain two Cubix power supplies. To indicate the number of power supplies to be monitored, select either Power 1 or Power 2, or both. No selection means no power supplies are to be monitored. An alarm is generated if a power supply fails.

Specify the **number of fans** that are to be monitored by the IES. In ERS II and ERS/FT II subsystems, both fans are monitored. Therefore, this field defaults to two for these subsystem types. In ERS, ERS/FT, and BOS subsystems only lock rotor fans can be monitored. Because lock rotor fans are not always installed, this field defaults to no monitorable fans for these subsystem types. You may select Fan 1, Fan 2, or both to indicate the number of lock rotor fans to be monitored. No selection means no lock rotor fans are to be monitored. An alarm will be generated if a fan fails.

**Other miscellaneous information** includes the following:

! Slot Power - some Cubix subsystems (e.g. the ERS/FT II) contain fuses on each slot for +5V over current protection. If slot fuses are configured, an alarm will be generated if a fuse fails or if power to that slot is removed. *Note that rather than using slot fuses, some ERS/FT II backplanes such as the PCI backplanes, use electronic circuit breakers for over current protection. When backplanes are equipped with electronic circuit breakers, each group of slots rather than individual slots are monitored. If an over current occurs on any one slot within the group, the entire group is powered down; not just the failed slot. If setup is being performed for a backplane equipped with electronic circuit breakers, "Group Power" replaces the term "Fuse Power."*

* Floppy Power - some Cubix subsystems contain a floppy drive fuse. If this option is configured, an alarm is generated if the floppy fuse fails.

* Keyboard Power - some Cubix subsystems contain a keyboard fuse (or circuit breaker). If this option is configured, an alarm is generated if the keyboard fuse fails.

* Speaker On - each IES is equipped with a speaker. If the speaker is enabled, it will sound in the event of an IES alarm.

The **Setup** screen may prompt the user to transfer the IES software to the IES being configured. BCVision transfers the software over the Cubix data highway. An IES is not fully functional until it has been configured by the **Setup** option and its software has been transferred.

NOTE! Performing an IES software transfer will clear the reset counters for the BC processors installed in the current IES. For an explanation of reset counters, refer to the **View Processor Detail** option of the **Functions Menu** on the BC Status Screen included in the next section of this chapter.

**Scan Data Highway**

When the BCMaster TSR is loaded, it automatically scans the Cubix data highway for sensors. To be found, an IES must be connected to the highway and be supplied with power. Each IES on the highway must also be configured with a unique identification number using a hardware switch on the IES.

Each IES contains a PROM used for data highway communications. However, most of the software which runs on the IES is transferred to the IES by BCVision from a firmware file (IESFRMWR.BIN). This allows the firmware to be easily updated in the field.

As BCMaster performs its initial scan it displays a message on the screen for each IES found. The revision of the PROM on the IES is included, as is the state of the Firmware and Setup configuration. If the Firmware is invalid or out of date, or the Setup is invalid, the IES needs to be configured using the **Setup** option. The BCMaster display may optionally be written to a file using standard DOS methods of redirection. Examine the BCMaster information and verify that all sensors are located. If an IES is not listed, verify its connection to the data highway. Also confirm that it is assigned a unique identification number by inspecting its switch setting.

BCVision builds an internal list of all sensors found during the initial scan. BCVision will poll each IES on this list for status and alarm conditions. The **Scan Data Highway** option on the **Functions Menu** causes BCVision to rebuild its internal list by performing another data highway scan. Once this function is performed BCVision communicates only with the sensors it finds during the new scan.

If BCVision loses communication with an IES, it generates an alarm and removes the IES from the internal list. BCVision makes no further attempts to communicate with this IES until the IES is functional and another scan is performed.

During a data highway scan BCVision attempts to communicate with each IES. If the IES responds, it is added to the list; otherwise a communication timeout occurs and BCVision proceeds to the next IES. To reduce the amount of time required to scan for sensors which are not present on the highway, BCVision provides a method of specifying the first and last IES identification numbers to be scanned. The scan function will consecutively attempt to communicate with each IES identification number starting with the number specified as the **Beginning Highway Address** and ending with the **Ending Highway Address**. The default range is 1 to 31.

**Mark All**

Selecting this option marks all sensors listed on the IES Status Screen. The **Mark All** option provides a easy way to perform an option once for all sensors in the IES Supervisory System. Individual sensors may be marked by highlighting the IES on the IES Status Screen and pressing the **<Space Bar>**.

# Help Menu

The options on the Help Menu are:

* About

* Overview

* Menu Commands

* 0C to 0F Conversion Chart

In addition, the **<F1>** function key provides help on the current function.

Press Esc to exit the menu.

---

# BC Status Screen

This screen displays status information on all of the BC processors installed in the subsystem of the current IES. To access this screen from the IES Status Screen, highlight the desired IES and press **<Enter>** (or select the **View BC Processors** from the **Functions Menu**). A screen similar to the one in Figure 3 - 10 will be displayed.

The bottom line of the display provides a quick reference of available functions.

For each BC processor in the subsystem, the BC Status Screen displays the IES identification number, the group number, the status, CPR condition, Pending Offline condition, and description.

The **ID** refers to the data highway identification of the current IES as determined by a hardware switch setting on the IES. Since the BC processors displayed are in the same subsystem, the ID number is the same for all of them.

The **group number** identifies which group in the segmented backplane of the subsystem contains the BC processor. Groups are defined for each subsystem as part of the **Setup** option performed from the **Functions Menu** of the IES Status Screen.

The current **status** of each BC processor is displayed as follows:

**Active** The BC Series processor is running

**Not Active** The BC Series processor does not respond to the IES

**Reset** The BC Series processor is resetting

**Offline** The IES is holding the BC processor offline

**Startup** The supervisory software is initializing and the status of the processor is not yet known

**Not Attached** No BC Series processor is physically attached to this connector on the multiplexor

**Group Off** Power to the group of slots containing the BC Series processor is turned off (supported by ERS/FT II only)

The **CPR** field indicates whether the automatic Cubix Processor Recovery function is enabled on this processor.

The **POL** field indicates whether the Pending Offline function is enabled on this processor.

The **Description** is specified by the user to describe and identify each BC Series processor.

From the BC Status Screen the following functions are available:

* Return to IES Screen

* Help

* Mark

* Reset

* Access Menu Options

## Help

Press **<F1>** to view help information describing BCVision.

### Mark

Some of the options available from the **Functions Menu** operate on BC Processors that are "marked". To mark a processor, use the arrow keys to position the highlight bar on the BC to be marked, and press the

**<Space Bar>**. Marked processors are indicated by a background color of dark blue. To unmark a BC processor, press the **<Space Bar>** again, and the color will return to its previous state.

Operations on the **Functions Menu** may be performed on multiple BC processors simultaneously by marking all of the processors to which the function applies and then executing the function. For example, assume that all of the BC processors are marked and the reset function is selected. All of the processors will be reset.

The ability to **Mark All** BC processors is available under the **Functions Menu**. This is a convenient way of performing a single function for all of the processors in a subsystem.

**Reset**

Pressing **<Alt>+R** instructs BCVision to reset all of the marked BC processors. If no processors are marked, the reset will be performed on the currently highlighted BC. The reset is generated by the IES in the subsystem with the BC processors. This is a hardware reset, and will reset the BC processors regardless of their state. If Confirmation is enabled (via the **Supervisor Menu**), a message requesting user verification will be displayed before the processors are actually reset.

**Access Menu Options**

The menus are accessed from the BC Status Screen the same way they are accessed from the IES Status Screen. The options available from each menu are also the same, with the exception of the **Functions Menu**.

# Functions Menu

The options available from the **Functions Menu** include:

* Reset Processor(s)

* Clear Reset Counters

* Set Processor(s) Online

* Set Processor(s) Offline

* Enable CPR

* Disable CPR

* Enable Pending Offline

* Disable Pending Offline

* Group Power Off

* Group Power On

* View BC Processor Detail

* Mark All

All of the functions except **Mark All** will apply to all marked BC processors. Marked processors are indicated by a dark blue background. If no processors are marked, the function will be performed on the currently highlighted BC (the highlight is indicated by a white foreground).

Press **Esc** to exit the menu.

**Reset Processor(s)**

Selecting this option causes all marked BC processors to be reset. Note that this function is also available by using the **<Alt>+R** hot key sequence from the BC Status Screen. Refer to the previous description of the reset function for more information.

**Clear Reset Counters**

Each IES maintains three counters for each BC Series processor being controlled. They are:

* CPR Resets - The number of times the IES has detected a failure and automatically reset the processor (CPR function).

* Manual Resets - The number of times the user has requested the processor to be reset through BCVision or SNMP.

* Normal Resets - The number of times the processor has been reset due to a cause not listed above (e.g. the user presses Ctrl+Alt+Del or the reset on loss of carrier function is invoked).

Selecting the **Clear Reset Counters** option instructs BCVision to initialize all of the counters for the marked BC Series processors to zero. Note that these counters are also cleared when the IES software is transferred to the IES.

**Set Processor(s) Online**

An offline processor may be placed online by selecting this option. Only marked processors with a status of "Offline" will be affected by execution of this function. Any processor that is displayed on the BC Status Screen that is not indicated as "Offline" is considered to be online, even if its status is "Inactive".

**NOTE**: The status of Pending Offline will be set to Disabled by the **Set Processor(s) Online** option.

**Set Processor(s) Offline**

Any marked processor on the BC Status Screen may be placed offline and held in an offline state by executing this option from the **Processor Menu**. To achieve an offline condition, the IES places the processor into a reset state and holds it in this condition until the processor is placed online using the **Set Processor(s) Online** option. Therefore, processors should not be taken offline while they are currently in use.

NOTE! To prevent the BC Supervisor from being placed off-line, the keyword "Super" (case insensitive), must be entered in the **Description** field of the **BCVision - IES Modules** screen. See Step 16 of the Installation Instructions in Chapter 2.

BR>

**Enable CPR**

Selecting this option from the **Functions Menu** enables the CPR feature on the marked BC Series processors.

NOTE! Enabling CPR on BC processors functioning as NetWare file servers is **not** recommended. File servers should be brought down in an orderly manner by the system administrator. If CPR is enabled on a file server, first verify that the BCACTIVE.NLM control software is properly installed (refer to the ***BC Series Software Installation Guide***).

**Disable CPR**

Selecting this option from the **Functions Menu** disables the CPR feature on the marked BC Series processors.

**Enable Pending Offline**

Selecting this option from the **Functions Menu** enables the Pending Offline feature on the marked BC processors. If Pending Offline is enabled on a processor, the IES Supervisory System monitors the processor until it is reset. Once the BC is inactive for any reason, the IES holds the processor offline and BCVision

generates an alarm stating that the BC has gone offline. This is a useful maintenance feature when used in conjunction with the BC reset on loss of carrier option. By enabling the Pending Offline option on all processors residing in a subsystem which is used for remote communications, an orderly shutdown of that subsystem may be performed. As users disconnect their remote sessions, carrier is lost and the BC processors reset. BCVision notifies the user and holds the processors offline, thus preventing other remote sessions from being initiated on those processors. When all active sessions are terminated in this fashion, the subsystem may be taken offline for maintenance in an orderly manner.

**NOTE:** Enable Pending Offline *cannot* be set for any BC with the keyword "Super" in its Description field.

**NOTE:** If Pending Offline is enabled on a BC that transitions between NetWare and DOS, the processor will be taken offline. This occurs because the IES interprets the transition as a reset condition.

**Disable Pending Offline**

Selecting this option from the **Functions Menu** disables the Pending Offline feature on the marked BC processors. Refer to the **Enable Pending Offline** option for an explanation of Pending Offline.

**NOTE:** If the BC processor is offline when Pending Offline is disabled, the IES Supervisory System attempts to place the processor Online.

**Group Power Off**

Applies to the ERS/FT II subsystem only. Group Power Off allows the slot group containing the marked BC processor to be turned off remotely. If multiple BC processors are marked, each group containing a marked BC is powered off.

NOTE! If the keyword "Super" is in the Description field of the marked BC a warning message notifies you that you are about to power off the BC Supervisor.

**Group Power On**

Supported by the ERS/FT II subsystem only, this feature allows power to a group of slots containing the marked BC processor to be turned on remotely. It has the same affect as pressing the group power on switch on the console of the ERS/FT II subsystem. If multiple BC processors are marked, each group containing a marked BC will be powered on.

**WARNING! Do NOT turn group power on to a group in a subsystem being serviced!** If power is applied to a group while boards are being installed or removed, or slots in the subsystem are being accessed for any other reason, damage may occur to the equipment if power is turned on.

**View BC Processor Detail**

The user may view detailed information describing each BC processor displayed on the BC Status Screen. The Processor Detail Display may be accessed from the **Functions Menu** or by using the **<Alt>+V** hot key sequence. The BC processor for which the Detail Display is generated will always be the BC that is currently highlighted. Figure 3 - 11 provides a sample Processor Detail Display screen.

This screen displays the details of the BC processor at the time the screen is invoked. The information displayed is static. To update the screen, exit by selecting the **OK** or **Cancel** button, and request to view the processor again.

The fields displayed include:

* The **Data Highway ID** of the IES residing in the subsystem these BC processors as determined by the IES hardware switch setting.

* The **Group Number** identifying in which group of the subsystem the BC processor is installed.

* The **Description** field, which may be modified from this screen.

* The **Status** of the processor.

* The current **CPR** condition (enabled/disabled).

* The **Pending Offline** condition (enabled/disabled).

* The **Reset Counters**:

CPR Resets - the number of resets performed automatically by the CPR function.

Manual Resets - the number of resets requested by the user via SNMP or BCVision.

Normal Resets - the number of resets performed on this processor by the user (Ctrl+Alt+Del) or reset on loss of carrier. Reset on loss of carrier is a configurable BC processor option (refer to the appropriate *BC Series Hardware Installation Guide*).

NOTE! The Normal Resets counter will be incremented when a BC Series processor transitions between running DOS and running NetWare 3.x/4.x. During this transition, the BC processor is not able to respond to the IES, and therefore the IES detects a processor reset. After the BCACTIVE.NLM is loaded, the BC processor resumes responding to the IES, and the IES detects it as active.

The Reset Counters may be cleared on demand from the **Functions Menu**. They are also cleared automatically each time new IES software is transferred to the IES.

**Mark All**

Selecting this option from the **Functions Menu** marks all BC processors listed on the BC Status Screen. All of the other options available from the **Functions Menu** apply to "marked" sensors. The **Mark All** option provides a simple way to perform an option once for all processors in the subsystem with the current IES. Individual processors may be marked by highlighting the processor on the BC Status Screen and pressing the **<Space Bar>**.

---

## SCSI Drives Status Screen

This screen displays status information on all SCSI drives installed in the subsystem of the current IES. To access this screen from the IES Status Screen, highlight the desired IES and press **<Enter>** (or select the **View SCSI Drives** from the **Functions Menu**). A screen similar to the one in Figure 3 - 12 will be displayed.

The bottom line of this screen displays the available functions.

For each SCSI drive in the subsystem, the SCSI Drives Status Screen displays the IES identification number, the slot number, the status, disk utilitzation, and description.

The IES **ID** refers to the data highway identification for the current IES. This ID is determined by a hardware switch setting on the IES. The ID number is the same for all drives in the same subsystem.

The **slot number** identifies which group in the segmented backplane of the subsystem contains the SCSI drive adapter. Groups are defined for each subsystem as part of the **Setup** option performed from the **Functions Menu** of the IES Status Screen.

The current **status** of each SCSI drive is displayed as follows:

**Online** The SCSI drive is online. Power is applied and the

drive is operational

**Offline** The IES is holding the drive offline. The drive is not operational

**Installed** A SCSI drive is physically attached to this slot

**Not Installed** No SCSI drive is physically attached to this slot or the drive key has not be turned to the ON position.

The **Utilization** field indicates the percentage of disk activity. Disk activity is measured at intervals of one second; however, the refresh rate set during configuration determines how frequently the activity updates on the screen.

The **Description** is specified by the user to describe and identify each SCSI drive.

From the SCSI Drives Status Screen the following functions are available:

* Return to IES Screen (press **<Esc>**)

* Help

* Mark

* Access Menu Options

**Help**

Press **<F1>** to view help information describing BCVision.

**Mark**

Some of the options available from the **Functions Menu** operate on SCSI drives that are "marked". To mark a drive, use the arrow keys to position the highlight bar on the drive to be marked, and press the **<Space Bar>**. Marked drives are indicated by a background color of dark blue. To unmark a drive, press the **<Space Bar>** again, and the color will return to its previous state.

Operations on the **Functions Menu** may be performed on multiple SCSI drives simultaneously by marking all of the drives to which the function applies and then executing the function. For example, assume that all of the drives are marked and the "Set SCSI Drives Offline" function is selected. All of the drives will be placed offline.

The ability to **Mark All** SCSI drives is available under the **Functions Menu**. This is a convenient way of performing a single function for all of the drives in a subsystem.

**Access Menu Options**

The menus are accessed from the SCSI Drives Status Screen the same way they are accessed from the IES Status Screen. The options available from each menu are also the same, with the exception of the **Functions Menu**.

**Functions Menu**

The options available from the **Functions Menu** include:

* Set SCSI Drives Online

* Set SCSI Drives Offline

* Modify Descriptions for Drive

* Mark All

All of the functions except **Mark All** and **Modify Descriptions for Drive** will apply to all marked drives. Marked drives are indicated by a dark blue background. If no drives are marked, the function will be performed on the currently highlighted drive (the highlight is indicated by a green background).

Press **Esc** to exit the menu.

**Set SCSI Drives Online**

An offline drive may be placed online by selecting this option. Only marked drives with a status of "Offline" will be affected by execution of this function.

**Set SCSI Drives Offline**

Any marked drive on the SCSI Drives Status Screen may be placed offline and held in an offline state by executing this option from the **Function Menu**. The IES places the drive into an offline state and holds it in this condition until the drive is placed online using the **Set SCSI Drives Online** option.

**Modify Description for Drives**

The option may be used to modify any name or description in the Description field of the SCSI Drives Status Screen. If no name or description exists for a specific drive, you may enter up to 31 alphanumeric characters to name or describe the marked drive. To do this, use the arrow-keys to highlight the drive to be named or modified. Select the **Modify Description for Drive** option from the **Functions Menu** and press **<Enter>**. Type the name or description and press **<Enter>**.

**Mark All**

Selecting this option from the **Functions Menu** marks all drives listed on the SCSI Drives Status Screen. All of the other options available from the **Functions Menu** apply to "marked" SCSI drives. The **Mark All** option provides a simple way to perform an option once for all SCSI drives in the subsystem with the current IES. Individual drives may be marked by highlighting the it on the SCSI Drives Status Screen and pressing the **<Space Bar>**.

Chapter 4
BCMaster

The IES Supervisory System includes the BCMaster Terminate-and-stay-resident (TSR) software. This TSR must be loaded before BCVision on the BC Supervisor. BCMaster is responsible for managing the Cubix Data Highway.

# Installation

The BCMaster TSR resides in the file BCMASTER.EXE on the *IES Supervisory System Diskette*. It is recommended that BCVision be executed automatically each time the BC Supervisor is booted. This requires adding the following lines to the AUTOEXEC.BAT file:

```
bcmaster
bcvision
```

NOTE! If SNMP support is desired, VLM.EXE should be executed before BCVISION.EXE is loaded.

These commands may alternatively be entered at the DOS command line.

# Unloading

To unload BCMaster, add **-Unload** or **-u** to the command as follows:

```
bcmaster -unload or
bcmaster -u
```

The screen will display a message confirming that BCMaster has been unloaded.

---

# Help

To obtain help on BCMaster, append **-help**, **-h**, or **-?** as follows:

```
bcmaster -help
bcmaster -h
bcmaster -?
```

The supported command line options will be displayed.

---

# Operation

BCMaster will use COM port 2 for data highway communications. This requires installing a Cubix Data Highway Adapter to the COM2 header on the BC Series processor. Instructions for installing this adapter are included in the ***IES Module Hardware Installation Guide***. IBM compatible PCS assign an I/O port and an interrupt to each COM port. The assignments for COM2 will be displayed by BCMaster when it is loaded. The default I/O port is 2F8 hexadecimal, and the default interrupt is IRQ 3. BCMaster displays this configuration information when it is loaded.

When BCMaster is invoked it scans the Cubix Data Highway for Intelligent Environmental Sensors (IES). BCMaster displays the message: **Scanning for IES modules**

To be found during the scan, an IES must be attached to the highway and must be supplied with power. BCMaster displays a message identifying each IES it locates. This information may be written into a file using standard DOS redirection techniques. When the scan is completed, BCMaster displays: **Scan completed.**

If all of the sensors are not located by BCMaster as expected, there may be a problem with the system hardware configuration. It is suggested that the problem be remedied <u>before</u> running BCVision. Refer to ***Chapter 5 - Troubleshooting***.

During the scan BCMaster retains control of the BC processor. The processor will not respond to user input until after this scan completes.