



**Code Download  
User's Manual**  
for  
**Communications Control Module,  
Integration Router Module,  
T1 Access Module,  
and Voice Software**

Part Number 800-1844-43, Rev. A

**December 1995**

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A Declaration of CE Conformance is on file at the MICOM addresses shown below. The declaration lists the models described in this manual. If the unit carries the CE mark, this declaration certifies that it meets the specific EMC standards required for CE marking. If the product is a module, the module is CE-compliant only if it is placed in a MICOM CE-marked base unit.

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## Safety Warnings and Cautions

Various safety agencies request statements of warning or caution to help you in the safe operation of the MICOM unit. These statements also apply to any and all modules installed within the unit.

To ensure adequate cooling of the equipment a 2.0 inch unobstructed space must be maintained around all sides of the unit.

The ac power socket shall be installed near the equipment and shall be easily accessible.

Installation and access to the interior of this unit shall be made only by a qualified technician.

Connection to the network is to be disconnected before the (mains) plug is removed.

### **Warning**

Remove power plug from the power socket before performing any service work on the unit.

### **Lithium Battery Caution**

Danger of explosion if battery is incorrectly replaced. Replace only with the same type or equivalent battery, as recommended by the manufacturer. Discard used batteries according to manufacturer's instructions.

The power supply is auto-ranging in this model.

The power supply cordset to be supplied in Europe must have 0.75<sup>2</sup>mm, 3 conductor "HAR" cord type H05VV-F, terminated in a grounding type Shucko plug on one end and a molded - on IEC 320 connector on the other end.

### **Technical Data**

Input Volts	: 100-240 Vac -5%, +10%
Input Current	
Marathon	
5K Turbo, 10K, 20K	
NetRunner	
500ET, 1000E, 2000E	: 3A-1.5A
Marathon 2K, 3K	
NetRunner 75E	: 2A-1A
Frequency	: 47-63 Hz

Um die Kühlung des Gerätes nicht zu beschränken, ist es notwendig um das Gerät herum an allen Seiten ca 5 cm Raum zu lassen.

Stellen Sie das Gerät in der Nähe einer geerdeten Schutzkontaktsteckdose so auf, dass diese leicht erreichbar und zugänglich ist.

Die Montage und der Zugang ins Innere des Gerätes sind nur einem qualifizierten Techniker gestattet.

Ehe der Netzstecker aus der Steckdose gezogen wird, müssen sämtliche äusserliche Verbindungen vom Gerät getrennt werden.

### **Warnung**

Vor öffnen des Gerätes, muss der Netzstecker aus der Steckdose gezogen werden.

### **Lithium Batterie Warnung**

Explosionsgefahr besteht wenn die Batterie nicht richtig ersetzt ist. Die Batterie darf nur mit einer gleichen oder gleichwertigen Batterie ersetzt werden.

Netzteil ist mit automatischer Umschaltung entsprechend der Versorgungsspannung versorgt.

Die Netzleitung sollte ein harmonisierter Typ (HAR) sein, mit der Bezeichnung H05VV-F oder H05VVH2-F, 3G 0.75<sup>2</sup>mm, mit einem Schutzkontakt - und einem Kaltgerätestecker (IEC 320).

### **Technische Daten**

Nennspannung	: 100-240 V~ -5%, +10%
Nennstrom	
Marathon	
5K Turbo, 10K, 20K	
NetRunner	
500ET, 1000E, 2000E	: 3A-1.5A
Marathon 2K, 3K	
NetRunner 75E	: 2A-1A
Frequenz	: 47-63 Hz

Pour assurer un refroidissement adéquat, maintenir un espace libre de 5 cm (2 pouces) tout autour de l'appareil.

Installer la prise AC à proximité de l'appareil, dans un rayon d'accès facile.

L'installation et l'ouverture de cet appareil est permise par un technicien autorisé seulement.

Avant de débrancher la prise de courant, assurer que toutes les connexions externes ont été déconnecté de l'appareil.

### **Avertissement**

Débrancher la prise de courant avant d'entreprendre aucun travail de réparation de l'appareil.

### **Batterie Au Lithium Avertissement**

Un danger d'explosion existe si la batterie est remplacée incorrectement. Remplacer avec une batterie identique ou similaire, recommandée par le fabriquant. Disposer des batteries utilisées selon la méthode prescrite par le fabriquant.

Ce modèle s'adapte automatiquement au courant électrique ou voltage de la prise murale.

En Europe, brancher l'appareil à la prise murale au moyen d'un fil "HAR" comprenant 3 cables H05VV-F ou H05VVH2-F de 0.75<sup>2</sup>mm chacun, avec à une extrémité une prise de terre genre SHUCKO et à l'autre une prise IEC 320.

### **Donnees Techniques**

Voltage d'Accès	: 100-240 V~ -5%, +10%
Courant d'Accès	
Marathon	
5K Turbo, 10K, 20K	
NetRunner	
500ET, 1000E, 2000E	: 3A-1.5A
Marathon 2K, 3K	
NetRunner 75E	: 2A-1A
Fréquence	: 47-63 Hz

### **Notification of FCC Requirements**

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications to this product, that could increase the amount of Radio Frequency Emissions from this product, without the expressed written approval of MICOM Communications Corp., could cause the product and the user to violate the FCC's Rules and Regulations, thus requiring the product to be turned off or disconnected.

If this unit is used on a DTE which requires use of shielded cables for compliance with FCC Part 15, then use of a filtered pin connector may be required to maintain FCC compliance. See the Installation section for specific applications.

### **Notification of Canadian Requirements**

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

### **United Kingdom Requirement: Interconnection of Ports Warning**

Interconnection directly, or by way of other apparatus, of ports marked "SAFETY WARNING. See instructions for use", with ports marked or not so marked may produce hazardous conditions on the network. The advice of a competent engineer must be obtained before such a connection is made. None of the ports provide isolation sufficient to satisfy the relevant parts of BS 6301. Apparatus connected to the ports, must either have been approved to the relevant parts of BS 6301 or to have been previously evaluated against BS 6301 British Telecom Technical Guides 2 or 26, and given permission to attach. Other usage will invalidate any approval given to this apparatus.

Any or all of the ports on the following modules may be configured as non-network ports:

- Communications Control Modules (CCM): 6 D-type ports
- Up to 4 Channel Expansion Modules (CEM): up to 6 D-type or 12 RJ45 ports
- LAN modules (including RTS, RLB, or IRM): AUI, BNC, and 8-pin modular jack ports
- NMS module: 1 log port, 1 command port
- Up to 4 2-port voice cards
- Alarm port

## **WARRANTY**

MICOM warrants that to the extent that the equipment delivered is hardware, such equipment shall be free from defective material and workmanship for a period of 3 years from the date of shipment of equipment from MICOM when given normal, proper and intended usage. MICOM further agrees to provide, without cost, emergency replacement equipment, shipped freight prepaid, for a period of ninety (90) days from date of shipment of the equipment and factory repair for the remainder of the warranty period provided that:

- (a) MICOM is promptly notified upon discovery that the equipment is defective;
- (b) The equipment is returned freight prepaid to MICOM;
- (c) MICOM's examination of the equipment shall disclose that any defect was not caused by failure of electrical power or air conditioning, damage from lightning or weather-related causes, accident, misuse, neglect, alteration, improper installation, unauthorized repair or improper testing.

To the extent the equipment is or contains software or firmware (collectively "Software"), MICOM warrants that for a period of one (1) year from the date of shipment, the Software shall be free from defects in material and workmanship under normal use and that the programs will perform according to the specifications contained in MICOM's user manual. MICOM does not warrant that the functions contained in the Software will meet a specific requirement or that the operation will be uninterrupted or error free.

**INSTALLING NON MICOM SOFTWARE IN MICOM EQUIPMENT SHALL VOID THIS WARRANTY.**

MICOM may, in its sole discretion, except for the first ninety (90) days of warranty, elect to repair or replace the equipment, in which event MICOM shall have a reasonable time to make repairs or to replace the equipment. MICOM will return the equipment freight prepaid.

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## **SERVICE INFORMATION**

If you experience difficulty with this product, contact your MICOM Certified Distributor for prompt assistance.

MICOM offers complete factory repair for both in-warranty and out-of-warranty equipment.

Before returning any equipment, you *must* obtain a Return Authorization number. Contact your distributor for assistance.

MICOM warrants all out-of-warranty repairs or upgrades performed at its factory location or performed by MICOM Customer Service for a period of 90 days after completion.

*Shipping charges must be prepaid.*

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# Introduction 1

## Overview

Code download allows for local or remote updating of MICOM's Integration software on:

- Flash EPROMs located in Communications Control Module (CCM) FlashPaks, release 4.0 and later
- The Communications Control Module (CCM) portion of the NetRunner 75E Branch Office Router LAN/WAN Module
- The Communications Control Module (CCM) and analog voice/fax module portions of the Marathon 3K Base Module
- Universal Voice/Fax Modules (UVMs), release 4.0 and later (or those upgraded with Flash EPROMs)
- Digital Voice Modules, release 4.3 and later
- T1 Access Modules, release 4.3 and later
- Integration Router Modules, release 6.0 and later

when these modules have code download capability.

The downloaded files are sent to their destination Flash EPROM devices as asynchronous data streams.

- Notes:**
- **The NetRunner 75E Branch Office Router** has Communications Control Module system software in a Flash EPROM on the LAN/WAN Module. This unit is available in single- and dual-flash image versions.

Unless otherwise specified, all references to the Communications Control Module flash capabilities can also apply to the CCM Flash EPROM on the NetRunner 75E. All references to "the LAN/WAN Module" refer to the CCM portion of the NetRunner 75E's LAN/WAN Module.

- **The Marathon 3K** has Communications Control Module system software in a Flash EPROM on its base module. This Flash EPROM is available in single- and dual-flash image versions.

In addition, the Marathon 3K Base Module contains one or two voice channels that can have code downloaded to them.

Unless otherwise specified, all references to the Communications Control Module flash capabilities also apply to the Communications Control Module Flash EPROM on the Marathon 3K Base Module.

## Three Methods of Downloading

The methods and interfaces available to download MICOM code are described below.

**Table 1-1. Code Downloading Methods Overview**

To perform a code download of . . .	using . . .	and . . .	For more information, see . . .
CCM software Voice software TAM software IRM software (including single-flash image CCMs — NetRunner 75E and Marathon 3K)	a personal computer, such as a PC or a Macintosh, running terminal emulation software with a file transfer mode.	an async connection to the device via a COM port on the personal computer.	"PC-Based Code Download," section 2 of this manual.
CCM software Voice software TAM software IRM software (excluding single-flash image CCMs — NetRunner 75E and Marathon 3K)	NETMan	an async connection to the device via a NETMan secondary channel.	the <i>NETMan User's Manual</i> , Part Number 800-1772-42.
IRM software	a server on the same LAN as the IRM. (For code downloads of <b>IRM code only</b> .)	Bootp or TFTP.	"LAN-Based Code Download," section 3 of this manual.

Key:

- CCM = Communications Control Module
- Voice = Universal Voice/Fax Module and Digital Voice Module
- TAM = T1 Access Module
- IRM = Integration Router Module

## Guidelines for Code Downloads

Following these guidelines will help ensure that you have successful code downloads.

Guideline	Purpose
Download software from the most remote to the most local node, working your way toward the PC that is doing the downloading	Provides general network stability during the code download/reset procedure
Perform resets to load the newly downloaded software from the most remote to the most local node, working your way toward the PC that did the download	

## Additional Information

### NETMan Interface Overview

NETMan uses an enhanced secondary channel to make an async type connection to the download facility (\$DLN) of the destination device. The procedure is identical to that described for the async interface. Through NETMan, users may download the code to several modules simultaneously.

### CCM Checksums

There are two checksums for downloadable MICOM Communications Control Module (CCM) software, one for the header and the other for the file. The header checksum insures that it is a valid download file; the file checksum insures the file is received correctly. If either the header or file checksums do not match, the code download will fail and you will have to download the software again.

# PC-Based Code Download 2

## Overview

Table 2-1 outlines the steps involved in the various kinds of PC-based code download, including:

- Communications Control Module Code Download
- Voice Channel Code Download, including downloads to:
  - Analog Voice/Fax channels
  - Digital Voice Module channels
- T1 Access Module Code Download
- Integration Router Module Code Download
- Blank Flash EPROM and Single-Flash Image Code Download

Additionally, the table provides page references for the procedures and tells whether commands are entered at the Command Facility, LCD/Keypad (for 5-slot chassis only), or the PC.

**Table 2-1. Overview of PC-Based Code Download Procedures**

If you want to...	Perform the steps beginning on page ...	The steps include ...	These steps require the use of the ...
Download CCM software to <ul style="list-style-type: none"> <li>• an operational CCM Flash-Pak</li> <li>• the CCM portion of a dual flash image NetRunner 75E LAN/WAN Module or the Marathon 3K Base Module</li> </ul>	2-7	1. Configure the Download Parameters 2a. Erase the Flash Image(s) 3. Install FlashDLD 4. Configure FlashDLD 5a. CCM Code Download	Command Facility (or LCD/Keypad) Command Facility (or LCD/Keypad) PC and Communications Software PC and Communications Software PC and Communications Software
Download Voice software	2-7	1. Configure the Download Parameters 2a. Erase the Flash Image(s) 3. Install FlashDLD 4. Configure FlashDLD 5b. Voice Channel Code Download	Command Facility (or LCD/Keypad) Command Facility (or LCD/Keypad) PC and Communications Software PC and Communications software PC and Communications software
Download TAM software	2-7	1. Configure the Download Parameters 2a. Erase the Flash Image(s) 3. Install FlashDLD 4. Configure FlashDLD 5c. T1 Access Module Code Download	Command Facility (or LCD/Keypad) Command Facility (or LCD/Keypad) PC and Communications Software PC and Communications software PC and Communications software
Download IRM software	2-7	1. Configure the Download Parameters 3. Install FlashDLD 4. Configure FlashDLD 5d. Integration Router Code Download	Command Facility (or LCD/Keypad) PC and Communications Software PC and Communications Software PC and Communications Software
Download CCM software to <ul style="list-style-type: none"> <li>• a completely erased CCM FlashPak</li> <li>• the CCM portion of a single flash image NetRunner 75E LAN/WAN Module or the Marathon 3K Base Module</li> </ul>	2-7	2b. Erase Both CCM Flash Memory Banks (for the "completely erased CCM FlashPak" scenario) 3. Install FlashDLD 4. Configure FlashDLD 5e. Blank Flash EPROM and Single Flash Image Code Download	A2 Download Facility or LCD/Keypad PC and Communications Software PC and Communications Software PC and Communications Software

**Key:**

- CCM = Communications Control Module
- Voice = Universal Voice/Fax Module or Digital Voice Module
- TAM = T1 Access Module
- IRM = Integration Router Module

**Notes:** These procedures all use the same first four steps with the exception of

- The Integration Router procedure (which skips Step 2), and
- The blank Flash EPROM procedure (which skips Step 1 and substitutes Step 2b for Step 2a),

The procedures differ most profoundly in their last steps (5a, 5b, 5c, and 5d respectively).

## Required Hardware and Software

**Note:** This manual describes MICOM's code download using IBM-PC type computers. However, the download may also be performed on other platforms.

To utilize MICOM's code download from a PC running terminal emulation software, requires the following hardware and software:

- An IBM-compatible, Intel 286-based (or better) PC with
  - A high-density 3½-inch floppy drive
  - A hard drive
  - An asynchronous COM port on the PC
- A MICOM unit with release 4.0 or later Communications Control Module code on either:
  - A Communications Control Module FlashPak
  - A NetRunner 75E LAN/WAN Module
  - A Marathon 3K Base Module
- If you are going to download voice or T1 code, you will need hardware as described in the following table.

Software Type	Hardware Release
Universal Voice/Fax Module	4.0 (or upgraded for code download)
3K Voice	4.2
Digital Voice Module	4.3
Digital Voice Expansion Module	
T1 Access Module	

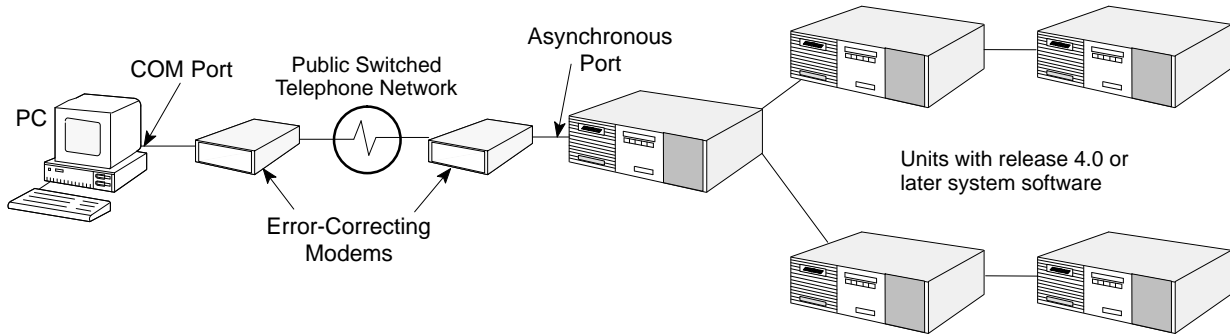
- If you are going to download Integration Router software, you will need an Integration Router module at release 6.0 or later.
- Terminal emulation software. We recommend one of the following:
  - PROCOMM PLUS for DOS, version 2.01
  - PROCOMM PLUS for Windows, version 1.02 or 2.0
  - FlashDLD, MICOM's terminal emulation software
- Code to download to the Communications Control Module flash bank, the voice channel flash bank, or the Integration Router Module flash bank. (This code is located on the FlashDLD diskette.)
- If modems are going to be used, they **must** be error-correcting.

- Notes:**
- **FlashDLD is designed only for downloading software to flash EPROMs on MICOM products.** No other uses for FlashDLD are supported.
  - **MICOM does not recommend the use of modems with FlashDLD.** However, if you do use modems with FlashDLD they must be error-correcting and modem commands must be entered manually.
  - **For information on installing Flash EPROMs in Universal Voice/Fax Modules** released prior to release 4.0, refer to the manual "Universal Fax/Voice Module Flash EPROM Field Upgrade Kit Installation Instructions" (part number 800-1849-40).
  - The following terminal emulation software programs do **not** work to download MICOM unit code:
    - PROCOMM PLUS for DOS, version 1.1.B or earlier
    - PROCOMM PLUS for Windows, version 1.01 or earlier
    - The Windows 3.1 Terminal program

### Communications Control Module Code Download

The Communications Control Module code download procedure can be executed while the unit is operational. In addition, the user can schedule the node reset that switches control to the new code, thus minimizing the impact on operations. This procedure requires a dual flash image Communication Control Module.

**Note:** **FlashDLD does not support modem use.** To use modems, as shown in these figures, you must use PROCOMM PLUS or another communications software package.

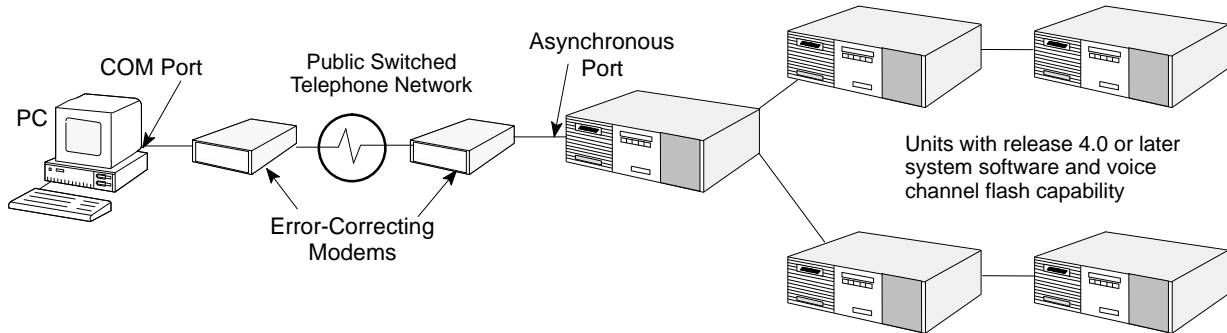


**Figure 2-1. A Communications Control Module Code Download Configuration**

### Voice Channel Code Download

Code download allows for local or remote updating of MICOM voice channel software, when this software and its Communications Control Module software are both at release 4.0 or later.

MICOM voice channels have one flash software bank each. Because of this single-bank-per-channel design, we do not recommend downloading code to a voice channel while it is operational; the code download will take that channel out of service. In addition, the single-bank design prohibits the user from scheduling the switch to the new code.



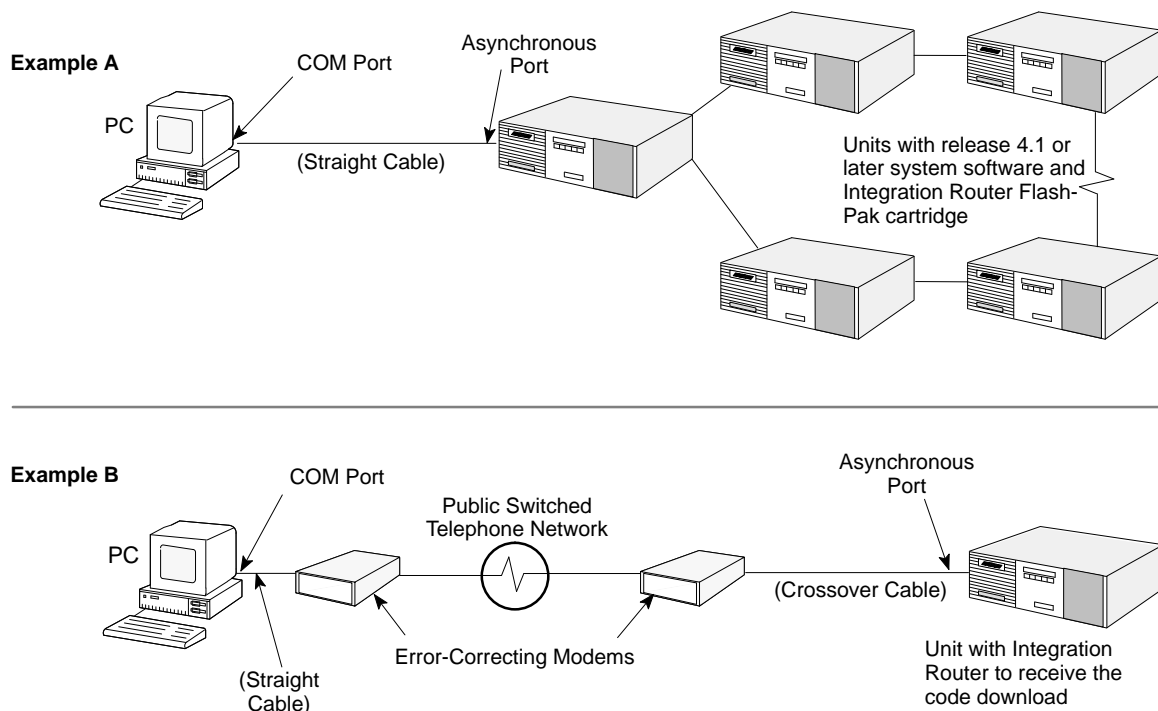
**Figure 2-2. A Voice Channel Code Download Configuration**

## Integration Router Module Code Download

Code download allows for local or remote updating of MICOM Integration Router Module software, when the Integration Router Module is at release 6.0 or later.

The Integration Router Module code cannot be downloaded to the Integration Router Module while it is operational. Note also that as soon as the code download is complete, the Integration Router Module will boot up to the new software; the user cannot schedule the switch to the new code.

The PC must be connected (directly or using modems) to an asynchronous port of a Communications Control Module that has a release 4.2 or later FEATUREPAK or FlashPak (system, or Communications Control Module) cartridge. Here are two examples of how to connect the PC:



**Figure 2-3. Two Code Download Configurations for Integration Router Modules**

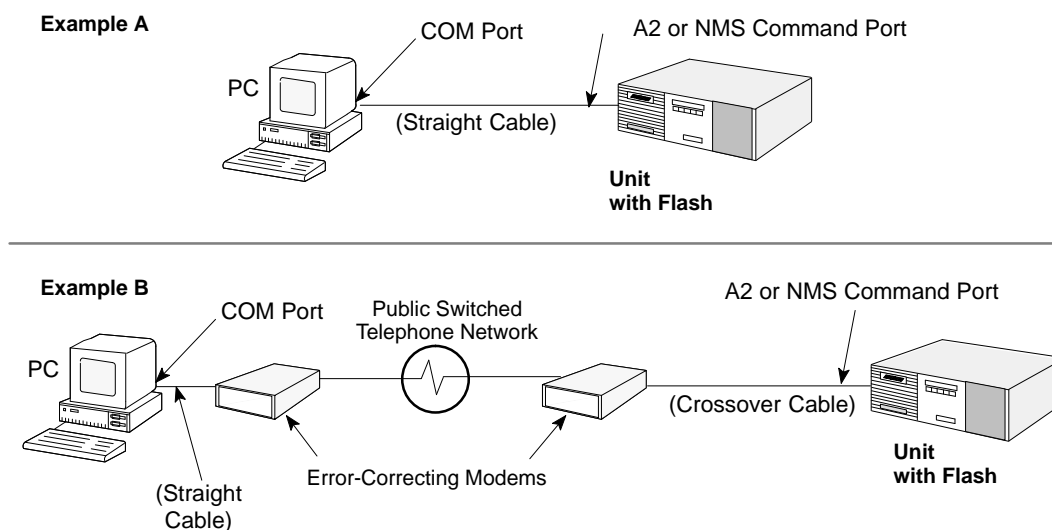
## Blank Flash EPROM and Single Flash Image Code Download

When a Communications Control Module EPROM has been completely erased — that is, when there is no software in either flash bank or in the single flash bank of a single flash image unit — code download allows for local or remote (through modems) updating of the Communications Control Module software.

**For dual flash image units**, this feature is used mainly in emergency situations when code has been erased or is unreadable in both flash memory banks. The only requirement is that the Communications Control Module be connected directly to the PC that will download code to it.

**For single flash image units**, such as some versions of the NetRunner 75E and Marathon 3K, this feature is the only method available for code download.

- Notes:**
- **Example A** below is a configuration designed for use with FlashDLD. FlashDLD requires a direct connection between the PC and A2 or the NMS Command Port, without the use of modems.
  - **Example B**, with its modem connections, shows a configuration which may be used with another communications software package such as PROCOMM PLUS.



**Figure 2-4. Two Blank Flash EPROM Code Download Configurations (For Downloading Communications Control Module Code to a Unit Connected Directly to a PC)**

## Step 1: Configure the Download Parameters

### Overview

Before you begin to download code, you must configure the download parameters for the \$DLD download facility. This configuration can either be done from the node's Command Facility (locally or remotely) or through NETMan. The procedure for configuring code download parameters using the Command Facility is described here; see the *NETMan User's Manual* for information on configuring download parameters using NETMan.

The procedures outlined here are also noted in the table in "Flash Status and Control Commands" on page A-1.

### Procedure

Before you can perform any of these commands, you must log into the Command Facility.

#### Set the \$DLD Password

- Select **Configure Local Nodes → Download Parameters → \$DLD Password**.
- Enter the password for the code download facility (\$DLD) password. (The password can have a maximum of 8 characters out of the set of A-Z and 0-9. It is not case-sensitive.)

## Set the Communications Control Module Bank to Activate on Reset (for Communications Control Module Downloads Only)

When you reset using **Reset → Node: Bank Selected Software**, instead of resetting from the Communications Control Module software running in RAM, the node resets from the flash bank you will activate in this step.

- Select **Configure Local Nodes → Download Parameters → Select Communications Control Module Bank to Activate**.
- Select one of the following:
  - Flash Bank 1
  - Flash Bank 2
  - Most Recent (default)

The “most recent” flash bank is the bank that contains the most recently released Communications Control Module software, as determined by the software’s date and time stamp.

- Notes:**
- **This procedure can also be performed at any time after software has been downloaded** if you want to switch flash software banks to load from.
  - **For information on overriding this setting**, refer to “Appendix C – Overriding the Selected Flash Bank” on page C-1.

## Set the \$DLD Activity Timeout

You may configure the length of time the unit’s \$DLD download facility will wait to disconnect if data transmission has ceased.

- Select **Configure Local Nodes → Download Parameters → \$DLD Activity Timeout (Seconds)**.
- Specify the timeout in seconds. (The default is 120 seconds.)

## Step 2a: Erase Flash Image

### Overview

Before you can download code, you must erase the code in the flash bank you will be downloading to.

- Note:** In situations where invalid images are loaded in both flash banks of a Communications Control Module FlashPak, you may erase both flash images. The procedure is described in “Erasing Both Communications Control Module Flash Images” on page 2-10.

### Procedure (from the Command Facility)

1. **Enter the Command Facility** by entering \$CMD at the ENTER CLASS: prompt.
2. In the Communications Control Module Command Facility Main menu, select **Configure Local Nodes** → **Download Parameters**.
3. Select the kind of flash bank you would like to erase:
  - **To erase Communications Control Module code** (or Communications Control Module code on the LAN/WAN module):
    - Select **Erase CCM Flash**.
    - Select the bank you would like to erase.
      - **Enter either 1 or 2** for all units except the Marathon 3K.
      - **In the case of the Marathon 3K**, you will be prompted with, "ERASE ALTERNATE CCM BANK" Select "Y" to erase, "N" to abort the operation.

**Note:** On the Marathon 3K, when there are two flash banks, "Erase CCM Flash" command will erase the inactive bank by default.

- To abort, enter <CTRL>X.

- **To erase analog voice/fax or Digital Voice Module code:**

- Select **Erase Voice Flash**.
- Select the node ID/channel number of the Flash EPROM bank to be erased, for example:

NODEB/C2

- To abort, enter <CTRL>X.

**Note:** In the case of the Digital Voice Module, after flash EPROM code has been erased, the channel indicator will be solid red, indicating that a code download is required.

- **To erase T1 Access Module code:**

- Select **Configure Local Nodes** → **Erase T1/E1 Flash**.
- Enter **Y** to confirm the erasure of T1 Access Module code.

During the erase procedure, the DT indicator will be solid red. When the erase procedure is complete, the message ERASE COMPLETED will appear, and the DT indicator will go off.

When T1 Access Module code has been erased, the T1 Access Module's DS5 indicators will be solid red, indicating that a code download is required.

- **On the Integration Router Module**, code is erased automatically before downloading by the DLD process.

## Step 2b: Erasing Both Communications Control Module Flash Memory Images

### Overview

Occasionally it may be necessary to simultaneously erase both flash memory images in FlashPaks, NetRunner 75E LAN/WAN Modules, or Marathon 3K units in order to load software on a blank Flash EPROM. This would be necessary, for example, if there is only one flash image loaded and the software does not run after being moved to RAM.

#### Commands for this procedure are issued through:

- The unit's LCD/Keypad, if it has one (for selected Communications Control Module FlashPaks only), or
- A connection to the NMS Command Port or A2 (for Communications Control Module FlashPaks)
- A connection to A2 (for LAN/WAN Modules or Marathon 3K units)

#### Voice Software

MICOM voice channel software must be erased using the procedure described in "Erase Flash Image(s)" on page 2-8.

### Procedures

Both Communications Control Module flash images can be completely erased simultaneously in either of the following ways:

#### Through the LCD/Keypad

(For 5-Slot Unit Communications Control Module FlashPaks Only)

1. **Reset the unit** by either:
  - Powering the unit off and then on, or
  - Simultaneously depressing the Left (←) and EXE buttons on the unit's LCD/Keypad.
2. **Depress the Up (↑) and Right (→) buttons** on the unit's LCD/Keypad. Do this immediately after releasing the Left (←) and EXE buttons and continue to depress until the A4 indicator comes on.

**Note:** When the A4 indicator comes on, the Communications Control Module flash images are being erased. Once both flash images have been erased, the A4 indicator will go off and the A1 indicator will come on.

**Through the A2 or the NMS command port**

(For Communications Control Module FlashPaks or the Communications Control Module portion of the NetRunner 75E or the Marathon 3K)

1. **Set up the terminal or terminal emulation software.** The proper settings are:
  - 9600 baud
  - no parity
  - 8 data bits
  - 1 stop bit
  - Raw ASCII (for PROCOMM PLUS)
2. **Reset the unit** by either:
  - Powering the unit off and then on, or
  - Simultaneously depressing the Left (←) and EXE buttons on the unit's LCD/Keypad, if it has one.
3. **Type *Erase* at the \$DLD> prompt.** The \$DLD> prompt will appear while the code is being moved to RAM, if it has one.

**Note:** When the A4 indicator comes on, the Communications Control Module flash images are being erased. Once both flash images have been erased, the A4 indicator will go off and the A1 indicator will come on.

## Step 3: Install the FlashDLD Program

### Procedures

FlashDLD, MICOM's terminal emulation software designed specifically to perform code downloads to MICOM products, is available in two versions — one for Windows and one for DOS. Both versions are included on the FlashDLD diskette. The installation procedure for both versions of FlashDLD software follows.

#### To Install FlashDLD for DOS

1. Place the FlashDLD diskette in a 3½-inch floppy drive on your PC.
2. Change directories to the *FlashDLD* directory. For example, if you are displaying the A drive prompt and the diskette is in drive B, you would do the following:

```
a> b:
b> cd flashdld
```

3. Once in the *FlashDLD* directory, you may enter the *dossetup* command.

The default source drive for *dossetup* is A; the default destination for the FlashDLD files is c:\flashdld. Either or both of these file locations can be changed using command line arguments in this format:

```
dossetup [source [destination]]
```

The following examples illustrate the use of *dossetup* command line arguments to change the source drive and destination directory.

#### dossetup Examples

Command	Result
dossetup b d:\flashdld.dos	Dossetup will look in the B drive for the files and load them on the D drive in the flashdld.dos directory.
dossetup b	Dossetup will look in the B drive for the files and load them on the C drive in the flashdld directory (the default).
dossetup a d:\flashdld.dos	Dossetup will look in the A drive (the default) for the files and load them on the D drive in the flashdld.dos directory.

## To Install FlashDLD for Windows

1. Place the FlashDLD diskette in a 3½-inch floppy drive on your PC.
2. Run the *winsetup.exe* file. From the Windows Program Manager, select **File** → **Run**. In the Command Line box, type the file location of the *winsetup.exe* file (*\flashdld\winsetup.exe*) preceded by the drive letter of the drive where the FlashDLD diskette is located and a colon. For example, if your FlashDLD diskette is in drive A, type:  

```
a:\flashdld\winsetup.exe
```
3. Select **OK**.
4. When the “Setup” screen appears, select **Continue** to begin the loading of FlashDLD.
5. In the “Destination Path” screen, select the name of the destination directory. (The default is C:\FlashDLD; if necessary, change the name.) Select **Continue**.
6. In the “Option Selection” click on deselect either “FlashDLD Executables” or “Flash Download Files” if you do not want to install them. (You will need the FlashDLD Executables to run MICOM’s FlashDLD software. The Flash Download Files are the files you will be downloading to your unit.) Click on **Continue**.
7. The default Windows program group for the FlashDLD executables is “FlashDLD”. If you would like to, you may change the name of the program group in the “Destination Group” screen. Select **Continue** when the box contains the name of the program group where you would like the FlashDLD executables to be displayed as Windows icons.
8. The FlashDLD setup program will install the FlashDLD software.

## Step 4: Configure FlashDLD

### Overview

FlashDLD, MICOM's terminal emulation software, is designed specifically to perform code downloads to MICOM products at release 4.0 or later. (The Integration Router Module requires release 6.0 of Integration Router software and release 4.2 of MICOM System Software.)

The following are the procedures for configuring FlashDLD for code download. FlashDLD is supplied in two versions, one for Windows and one for DOS. The configuration of both versions is described below. If you are using MICOM's FlashDLD software to perform a code download you will need this procedure as well as the one described in "How to Download Code" below.

**Note:** If you are using a communications software package other than FlashDLD remember that these procedures describe specific menu choices for use with MICOM's FlashDLD software. While the download parameters will be set to the same values no matter what communications software package you are using, other software packages, such as PROCOMM PLUS, will have their own configuration procedures. Refer to the your software's documentation for information on its use.

### Configuration Settings

Whether you use FlashDLD or PROCOMM PLUS, you must configure your communications software (and any modems) as follows:

Communications Software	Remote Modem Attached to Unit
8-bit	8-bit
No parity	No parity
Software flow control (XON/XOFF)	Software flow control (XON/XOFF)
Transparent (or Raw) ASCII or Binary	No echo
The baud rate must be equal to that of the unit's port.	No result codes
	Dial up mode
	Asynchronous mode
	DCD follows remote carrier

## To Configure FlashDLD for DOS

1. Type the command to run FlashDLD for DOS:  

```
c:\flashdld> flashdos.exe
```
2. Type <Alt>S to enter setup mode.
3. Use the space bar to toggle between configuration parameter choices. Use the arrow keys to move down the list. When you are done, the screen should look something like this:

### Change Configuration

```
Use <SPACE BAR> to toggle item
Use <ESC> to exit setup
Parameter | Setup
-----
COM Port   | COM1
Baud Rate  | 9600
Word Size  | 8
Parity     | None
Stop Bits  | 1
```

The COM Port may be configured for either COM1 or COM2, depending on your setup.

4. Once the configuration is correct, exit the setup mode. Type <ESC>.
5. When asked "Save this configuration?", answer Y.

## FlashDLD for DOS Commands

The commands available within the FlashDLD program for DOS are indicated in the table below.

Keystroke	Function
<Alt>E	Exits the program
<Alt>B	Performs a one-second break
<Alt>C	Clears local screens and resets the terminal emulator
<Alt>S	Enters the setup mode
<Alt>F	Enters the file send mode
<Esc>	Accepts configuration or aborts download in progress

## To Configure FlashDL D for Windows

1. Double-click on the FlashDL D for Windows icon.
2. Select **Configuration** from the main menu.
3. Set the COM options as follows:

COM Option	Setting
Port	COM1, COM2, COM3, or COM4 (as appropriate for your installation)
Baud Rate	9600
Data Bits	8
Parity	None
Stop Bits	1

**Note:** With the exception of the port option (COM1, etc.), these are the default settings. The default port is COM1.

## Step 5a: Communication Control Module Code Download

### Overview

Any Communications Control Module dual-flash image EPROM at release 4.0 or later at may have code downloaded to it as an async data stream from any point in the network.

The following procedure is for downloading MICOM software from a PC using a communications package (such as PROCOMM PLUS or MICOM's FlashDLD terminal emulation software) and connected to any async channel in the MICOM network. This procedure allows for the downloading of software to operational units.

- Notes:**
- **During a code download, the network acts as a data pipe** and does not look at the contents of the transferred file. Only the destination download facility interprets the download file (which may be considerably different for the different devices).
  - **MICOM's FlashDLD program is designed only for downloading software** to Flash EPROM on MICOM products. No other uses for FlashDLD are supported.

### When to Use

Use this procedure for all Communications Control Module code downloads except those to:

- Completely erased Communications Control Module Flash EPROMs
- Single-flash image EPROMs, such as those on some NetRunner 75E and Marathon 3K units

**Note:** To download code to completely erased Communications Control Modules or Flash EPROMs, use Step 5d, the "Communications Control Module Blank Flash EPROM Code Download" procedure, on page 2-30).

Before you perform this procedure, you should have already have performed the following steps:

1. Configure the download parameters
- 2a. Erase the flash bank to which you will be downloading code
3. Install FlashDLD (or another communications software package)
4. Configure FlashDLD (or another communications software package)

**Procedure: Communications Control Module Code Download**

1. **Configure modems.** For modems attached directly to units, issue the following command string to the modem through an ASCII terminal:

```
AT&FE0Q1S0=2&C1&D0&W
```

followed by a carriage return. This command sets up the modem for communication. For more information on modem setup, refer to the *Network Management System Module User's Manual*.

2. **Enter terminal emulation mode.** In FlashDLD, configuring the FlashDLD parameters and clicking "OK" will bring up a terminal emulation window if FlashDLD and the port on your unit are configured correctly.
3. **Type <return>** to get to the ENTER CLASS: prompt.
4. **Connect to the download facility (\$DLD)** of the unit as follows.

**Note:** Before the destination download facility (\$DLD) will accept a connection, the flash bank must have been previously erased. In the case of Communications Control Module FlashPaks and the Communications Control Module portion of LAN/WAN Modules, which have two flash banks, only one flash bank should be erased. See "Flash Status and Control Commands" on page A-1 for information on displaying the status of flash banks.

Action	Response
<p><b>Summary</b> Connect to the unit's download facility at the ENTER CLASS: prompt. The command will have the following format:  ENTER CLASS: <i>node_ID</i>/\$DLD where</p> <ul style="list-style-type: none"> <li>• <i>node_ID</i> is the name of the node</li> <li>• \$DLD is the download facility command</li> </ul> <p><b>Example</b> To connect to the download facility of a Communications Control Module in a node named <i>node1</i>:</p> <pre>node1/\$DLD</pre>	<p>ENTER PASSWORD:</p>
<p>Enter the correct download password.</p>	<p>[ CALL IN PROGRESS ]* CONNECTED</p>
<p>* If connecting to a remote unit, you will see this message.</p>	

5. **Switch to file transfer mode and send the download file.** The download facility will disconnect when the download is complete.
  - **For FlashDLD for DOS,** enter **Alt-F** to enter the file transfer mode. Then, select the file to download.
  - **For FlashDLD for Windows,** select **File** → **Send** to enter the file transfer mode. Highlight the file to download, and click on **OK**.

The following messages should appear:

```
DOWNLOAD COMPLETE
DISCONNECTED
```

In addition, the following error messages may appear on your terminal during download.

Unit Message, or Summary
INVALID DOWNLOAD FILE!!
FLASH WRITE ERROR!!
DOWNLOAD FILE CHECKSUM ERROR!!
WRONG HARDWARE PLATFORM!!

- Notes:**
- **If any of the above errors are detected during download**, the bank will be erased and you will need to attempt the code download again.
  - **Each download facility has an activity timer.** If no data is received for a specified interval, the connection will be broken, and the flash bank written to during the attempted download will be erased. (The default activity timeout is 120 seconds. Refer to “Set the \$DLD Activity Timeout” on page 2-8 for details on configuring the activity timeout.)
  - **If the connection** to the \$DLD Download Facility is broken before the “Download Complete” message is received, the bank will be erased.
  - **If the FlashDLD window** fills up with data, the download has been unsuccessful and the FlashDLD software may need to be reinitialized. Quit FlashDLD and start it up again to reinitialize it.
  - **Once you have connected to the \$DLD facility**, you must not type anything into the computer. The \$DLD facility will try to interpret anything typed in at this point as downloaded code.
6. **Verify the success of the download procedure** by accessing the destination node's Command Facility and checking the contents of the flash bank(s) in question.

Under the Main menu, select **Status and Statistics** → **PROM ID**. This will display information on both Communications Control Module flash memory banks and their latest revision loaded into CMOS. (For more information on flash commands, refer to “Flash Status and Control Commands” on page A-1).

## Step 5b: Voice Channel Code Download

### Overview

MICOM analog voice/fax and Digital Voice Modules can have code downloaded to them according to the following guidelines:

- The Universal Voice/Fax Module (containing a Flash EPROM at release 4.0 or later software and installed in a unit that is also at release 4.0 or later)
- Digital Voice Modules at release 4.3 or later (and installed in a unit that is also at release 4.3 or later). These include Digital Voice Modules on
  - T1 Access Modules
  - E1 Access Modules
  - Digital Voice Expansion Modules

The code is downloaded as an async data stream from any point in the network.

The following procedure is for downloading MICOM voice software from a PC using a communications package (such as PROCOMM PLUS or MICOM's FlashDLD terminal emulation software) and connected to any async channel in the MICOM network. This download procedure does **not** allow for downloading software to voice channels in operation.

- Notes:**
- **During a code download, the network acts as a data pipe** and does not look at the contents of the transferred file. Only the destination download facility interprets the download file (which may be considerably different for the different devices).
  - **MICOM's FlashDLD program is designed only for downloading software** to Flash EPROM on MICOM products. No other uses for FlashDLD are supported.
  - **For information on installing Flash EPROMs in Universal Voice/Fax Modules** released prior to release 4.0, refer to the manual "Universal Fax/Voice Module Flash EPROM Field Upgrade Kit Installation Instructions" (part number, 800-1849-40).

### When to Use

Before you perform this procedure, you should have already performed the following steps:

1. Configure the download parameters
- 2a. Erase the flash image on the voice channel to which you will be downloading code
3. Install FlashDLD (or another communications software package)
4. Configure FlashDLD (or another communications software package)

## Procedure: Voice Channel Code Download

1. **Configure modems.** For modems attached directly to units, issue the following command string to the modem through an ASCII terminal:

```
AT&FE0Q1S0=2&C1&D0&W
```

Then press <Enter>. This command sets up the modem for communication. For more information on modem setup, refer to the *Network Management System Module User's Manual*.

2. **Enter terminal emulation mode.** In FlashDLD, configuring the FlashDLD parameters and clicking "OK" will bring up a terminal emulation window if FlashDLD and the port on your unit are configured correctly.
3. **Type <return>** to get to the ENTER CLASS: prompt.
4. **Connect to the download facility (\$DLD)** of the unit as follows.

**Note:** Before the destination download facility (\$DLD) will accept a connection, the flash EPROM must have been previously erased. See the "Flash Status and Control" section on page A-1 for information on displaying the status of flash banks.

Action	Response
<p><b>Summary</b></p> <p>Connect to the voice channel's download facility at the ENTER CLASS: prompt. The command will have the following format:</p> <p>ENTER CLASS: <i>node_ID/channel/\$DLD</i></p> <p>where</p> <ul style="list-style-type: none"> <li>• <i>node_ID</i> is the name of the node</li> <li>• <i>channel</i> is the channel number</li> <li>• <i>\$DLD</i> is the download facility command</li> </ul> <p><b>Example</b></p> <p>To connect to the download facility of a voice channel installed in location D1 on a node named <i>node1</i>:</p> <pre>node1/D1/\$DLD</pre>	<p>ENTER PASSWORD:</p>
<p>Enter the correct download password.</p>	<p>[ CALL IN PROGRESS ]*</p> <p>CONNECTED</p>
<p>* If connecting to a remote unit, you will see this message.</p>	

5. **Switch to file transfer mode and send the download file.** The download facility will disconnect when the download is complete.
  - **For FlashDLD for DOS,** enter **Alt-F** to enter the file transfer mode. Then, select the file to download.
  - **For FlashDLD for Windows,** select **File** → **Send** to enter the file transfer mode. Highlight the file to download, and click on **OK**.

The following status messages should appear:

```
DOWNLOAD COMPLETE
DISCONNECTED
```

In addition, the following error messages may appear on your terminal during download:

Messages
INVALID DOWNLOAD FILE!!
FLASH WRITE ERROR!!
DOWNLOAD FILE CHECKSUM ERROR!!

- Notes:**
- **If you get an error message indicating that the software was not received well at the channel** (such as “FLASH WRITE ERROR!!”), erase the software again and re-attempt the code download.
  - **If the FlashDLD window** fills up with data, the download has been unsuccessful and the FlashDLD software may need to be reinitialized. Quit FlashDLD and start it up again to reinitialize it.
  - **Each download facility has an activity timer.** If no data is received for a specified interval, the connection will be broken, and the flash EPROM written to during the attempted download will be erased. (The default activity timeout is 120 seconds. Refer to “Set the \$DLD Activity Timeout” on page 2-8 for details on configuring the activity timeout.)
  - **Once you have connected to the \$DLD facility,** you must not type anything into the computer. The \$DLD facility will try to interpret anything typed in at this point as downloaded code.
6. **Verify the success of the download procedure** by accessing the destination node's Command Facility and checking the contents of the flash EPROM(s) in question.

Under the Main menu, select **Status and Statistics** → **Voice/Fax Status**. This will PROM number and revision of the software in the flash EPROM. (For more information on flash commands, refer to “Flash Status and Control Commands” on page A-1).

## Step 5c: T1 Access Module Code Download

### Overview

Any MICOM T1 Access Module may have code downloaded to it as an async data stream from any point in the network.

The following procedure is for downloading MICOM T1 Access Module software from a PC using a communications package (such as PROCOMM PLUS or MICOM's FlashDLD terminal emulation software) and connected to any async channel in the MICOM network. This download procedure does **not** allow for downloading software to T1 Access Modules in operation.

- Notes:**
- **During a code download, the network acts as a data pipe** and does not look at the contents of the transferred file. Only the destination download facility interprets the download file (which may be considerably different for the different devices).
  - **MICOM's FlashDLD program is designed only for downloading software** to Flash EPROM on MICOM products. No other uses for FlashDLD are supported.
  - **T1 Access Module code download** requires MICOM System Software release 4.3 or later.

### When to Use

Before you perform this procedure, you should have already performed the following steps:

1. Configure the download parameters
- 2a. Erase the flash image on the T1 Access Module to which you will be downloading code
3. Install FlashDLD (or another communications software package)
4. Configure FlashDLD (or another communications software package)

### Procedure: T1 Access Module Code Download

1. **Configure modems.** For modems attached directly to units, issue the following command string to the modem through an ASCII terminal:

```
AT&FE0Q1S0=2&C1&D0&W
```

Then press <Enter>. This command sets up the modem for communication. For more information on modem setup, refer to the *Network Management System Module User's Manual*.

2. **Enter terminal emulation mode.** In FlashDLD, configuring the FlashDLD parameters and clicking "OK" will bring up a terminal emulation window if FlashDLD and the port on your unit are configured correctly.

3. **Type <return>** to get to the ENTER CLASS: prompt.
4. **Connect to the download facility (\$DLD)** of the unit as follows.

**Note:** Before the destination download facility (\$DLD) will accept a connection, the flash bank must have been previously erased. See the "Flash Status and Control" section on page A-1 for information on displaying the status of flash banks.

Action	Response
<p><b>Summary</b></p> <p>Connect to the T1 Access Module's download facility at the ENTER CLASS: prompt. The command will have the following format:</p> <p>ENTER CLASS: <i>node_ID</i>/TAM/\$DLD</p> <p>where</p> <ul style="list-style-type: none"> <li>• <i>node_ID</i> is the name of the node</li> <li>• TAM is the T1 Access Module's channel number</li> <li>• \$DLD is the download facility command</li> </ul> <p><b>Examples</b></p> <p>To connect to the download facility of the T1 Access Module installed in a node named <i>node1</i>:</p> <p style="padding-left: 40px;"><i>node1</i>/TAM/\$DLD</p>	<p>ENTER PASSWORD:</p>
<p>Enter the correct download password.</p>	<p>[ CALL IN PROGRESS ]*</p> <p>CONNECTED</p>
<p>* If connecting to a remote unit, you will see this message.</p>	

5. **Switch to file transfer mode and send the download file.** The download facility will disconnect when the download is complete.
  - **For FlashDLD for DOS**, enter **Alt-F** to enter the file transfer mode. Then, select the file to download.
  - **For FlashDLD for Windows**, select **File** → **Send** to enter the file transfer mode. Highlight the file to download, and click on **OK**.

The following messages may appear on your terminal during download:

Unit Message
INVALID DOWNLOAD FILE!!
FLASH WRITE ERROR!!
DOWNLOAD FILE CHECKSUM ERROR!!
DOWNLOAD COMPLETE

In addition, the following messages may appear if you try to access the T1 Access Module after its code has been erased but before new code has been downloaded to it.

Unit Message or Indicator	Explanation
T1/E1 INVALID FLASH, PLEASE DOWNLOAD!!	If you try to access the T1 Access Module after its operational code has been erased, this message reminds you to perform a code download.
T1/E1 CODE DOWNLOAD IS IN PROGRESS, PLEASE TRY LATER!!	If you try to reset the T1 Access Module from the Command Facility while a code download is in progress, this message will explain why the reset is unsuccessful.
DS5 — Solid Red	Code download required.
DS1 — Flashing Green	Code download in progress.
DS1 — Solid Green	Operational.

- Notes:**
- **If you get an error message indicating that the software was not received well at the channel** (such as "FLASH WRITE ERROR!!"), erase the software again and re-attempt the code download.
  - **If the FlashDLD window** fills up with data, the download has been unsuccessful and the FlashDLD software may need to be reinitialized. Quit FlashDLD and start it up again to reinitialize it.
  - **Each download facility has an activity timer.** If no data is received for a specified interval, the connection will be broken, and the flash bank written to during the attempted download will be erased. (The default activity timeout is 120 seconds. Refer to "Set the \$DLD Activity Timeout" on page 2-8 for details on configuring the activity timeout.)
  - **The T1 Access Module code download may take longer than other MICOM code downloads.** Be sure to wait for the DISCONNECTED message, otherwise you might abort the code download.
6. **Verify the success of the download procedure.** If the DS1 indicator is solid green, the code download has been successful. You may further verify this by accessing the destination node's T1/E1 user interface from the Command Facility. If you can access this interface, the code download has been successful.

## Step 5d: Integration Router Module Code Download

### Overview

Any Integration Router Module at release 6.0 or later that is installed in a unit with Communications Control Module software at release 4.2 or later may have code downloaded to it as an async data stream from any point in the WAN.

Besides the procedures outlined here, the Integration Router Module can also have code downloaded to it from NETMan or by using Bootp or TFTP. For information on code downloads to the Integration Router Module using NETMan, refer to the *NETMan User's Manual*; for information on code downloads to the Integration Router Module using Bootp or TFTP, refer to "LAN-Based Code Download" in section 3 of this manual or to the *Integration Router User's Manual*.

The following procedure is for downloading MICOM Integration Router Module software from a PC using a communications package (such as PROCOMM PLUS or MICOM's FlashDLD terminal emulation software) and connected to any async channel in the MICOM network. This download procedure does **not** allow for downloading software to an operational Integration Router Module.

- Notes:**
- **During a code download, the network acts as a data pipe** and does not look at the contents of the transferred file. Only the destination download facility interprets the download file (which may be considerably different for the different devices).
  - **MICOM's FlashDLD program is designed only for downloading software** to Flash EPROM on MICOM products. No other uses for FlashDLD are supported.

### When to Use

Before you perform this procedure, you should have already performed the following steps:

1. Configure the download parameters
3. Install FlashDLD (or another communications software package)
4. Configure FlashDLD (or another communications software package)

## Procedure: Integration Router Module Code Download

1. **Connect to the Command Facility (\$CMD)** of the unit whose Integration Router Module is to receive the code download:

Action	Response
<p><b>Summary</b> Connect to the unit's Command Facility at the ENTER CLASS: prompt. The command will have the following format:</p> <p>ENTER CLASS: <i>node_ID</i>/\$CMD where</p> <ul style="list-style-type: none"> <li>• <i>node_ID</i> is the name of the unit whose Integration Router Module is to receive the code download</li> <li>• \$CMD is the Command Facility command</li> </ul> <p><b>Example</b> To connect to the Command Facility of a node named <i>node1</i>:</p> <p>ENTER CLASS: <i>node1</i>/\$CMD</p>	<p>ENTER CLASS PASSWORD:</p>
<p>Enter the correct password.</p>	<p>[ CALL IN PROGRESS ]* CONNECTED</p>
<p>* If connecting to a remote unit, you will see this message.</p>	

2. **Reset the Integration Router Module.** From the Command Facility Main Menu, select **Reset** → **Integral LAN**.
3. **Specify the location containing the Integration Router Module** (usually slot B) at the ENTER MODULE LOCATION prompt. In this example, we will use module location B:

```
ENTER MODULE LOCATION [B-E] (^X TO ABORT):b
```

4. **Place the Integration Router Module in code download mode.** From the Integral LAN Reset Menu select **Code Download: WAN to LAN**.

Displayed on the screen you will see a message sequence similar to the following:

```
21:23:32 TPNET [B] LAN RESET: WAN->LAN RELOAD
21:24:02 TPNET {B} LAN MODULE UP
21:24:04 TPNET [B] Boot 144-0153-0A
21:24:10 TPNET [B] CCM load waiting:
```



### WARNING

You must see the *CCM load waiting*: message displayed before proceeding to the next step. Once this message appears, the Integration Router Module is in the download mode and ready for data.

5. **Exit the Command Facility.** Select **Exit Command Facility** from the Command Facility Main Menu.

If the PC is connected to an intermediate unit (i.e., not physically connected to the unit whose Integration Router Module is being downloaded), then exit from that unit's Command Facility Main Menu, as well.

6. **Connect to the download facility (\$DLD)** of the Integration Router Module that is having code downloaded to it.

Action	Response
<p><b>Summary</b> Connect to the Integration Router Module's download facility at the ENTER CLASS: prompt. The command will have the following format: ENTER CLASS: <i>node_ID/lan_slot/\$DLD</i></p> <p>where</p> <ul style="list-style-type: none"> <li>• <i>node_ID</i> is the name of the node</li> <li>• <i>lan_slot</i> is the letters "LAN" followed by the module location of the Integration Router Module (usually B). (Note that the default class name for the Integration Router Module can be changed. If it has been changed, you must use this new default class name.)</li> <li>• \$DLD is the download facility command</li> </ul> <p><b>Example</b> To connect to the download facility of an Integration Router located in module location B of a node named <i>node1</i>:</p> <pre>node1/lanb/\$DLD</pre>	<p>ENTER PASSWORD:</p> <p>[ CALL IN PROGRESS ]* CONNECTED</p>
* If connecting to a remote unit, you will see this message.	

**Note:** If you do not receive a "Call In Progress" message followed by a "Connected" message, the Integration Router Module may not be ready for the download. Wait a few seconds, then try again.

7. **Send the code download file to the Integration Router Module** using the ASCII file transfer mode of the PC program.

- **For FlashDLD for DOS**, enter **Alt-F** to enter the file transfer mode. Then, select the file to download.
- **For FlashDLD for Windows**, select **File** → **Send** to enter the file transfer mode. Highlight the file to download, and click on **OK**.

During the download, the Integration Router Module will cause various messages to be displayed on the LCD (if there is one) and on a \$CMD terminal (if connected). On the \$CMD terminal, a normal code download will cause the following message sequence (where TPNET is the name of the node):

```
00:00:25 TPNET [B] $DLD Connected
CONNECTED TPNET/B01 TPNET/A05
00:00:45 TPNET [B] Erasing Flash...
00:05:07 TPNET [B] Done
00:05:32 TPNET [B] CCM downloading...
00:14:37 TPNET [B] CCM load success.
DISCONNECTED TPNET/B01 TPNET/A05
00:14:41 TPNET [B] Adding checksums..
00:15:21 TPNET [B] LAN RESET: VIA LAN MODULE
00:15:45 TPNET [B] LAN MODULE UP
```

Once the download is successful and the new software stored in the LAN FlashPak, the Integration Router Module will reset and start executing the new software.

- Notes:**
- **If you get an error message indicating that the software was not received well at the channel** (such as "FLASH WRITE ERROR!!"), erase the software again and re-attempt the code download.
  - **If the FlashDLD window fills up with data**, the download has been unsuccessful and the FlashDLD software may need to be reinitialized. Quit FlashDLD and start it up again to reinitialize it.
  - **Each download facility has an activity timer.** If no data is received for a specified interval, the connection will be broken, and the flash EPROM written to during the attempted download will be erased. (The default activity timeout is 120 seconds. Refer to "Set the \$DLD Activity Timeout" on page 2-8 for details on configuring the activity timeout.)
  - **Once you have connected to the \$DLD facility**, you must not type anything into the computer. The \$DLD facility will try to interpret anything typed in at this point as downloaded code.

## Step 5e: Blank Flash EPROM and Single Flash Image Code Download

### Overview

In addition to the code download procedures outlined above, Communications Control Module Flash EPROMs at release 4.0 or later with dual flash image capabilities can have code downloaded to them even if there is no code in flash memory. They contain a boot PROM which allows for code downloads (from a PC connected either locally or through modems to the A2 or NMS Command Port).

This blank Flash EPROM code download procedure also allows for downloading code to single flash image units, such as some NetRunner 75E and Marathon 3K units.

The boot PROM moves the operational code from the Flash EPROM to static RAM, then transfers control to that code. (For a description of this process, refer to “Appendix B — The Boot PROM Startup Process” on page B-1.)

During this procedure, the Communications Control Module image is written to both flash banks of a dual bank FlashPak.

- Notes:**
- **FlashDLD, MICOM's terminal emulation program is designed only for downloading software** to Flash EPROMs on MICOM products. No other uses for the terminal emulation software are supported.
  - **The following procedure assumes that both banks of the flash EPROM have already been erased.** See “Erasing Both Communications Control Module Flash Memory Images” (page 2-10) for information on erasing both Communications Control Module or LAN/WAN Module flash images.

### When to Use

Use this procedure only when:

- Both flash images of Communications Control Module software have been erased or contain corrupted code.
- Downloading code to a single-flash image Communications Control Module, such as on some NetRunner 75E and Marathon 3K units.

Perform code downloads other than those described above using the “Communications Control Module Code Download” procedure (page 2-17).

**Procedure: Communications Control Module Blank Flash EPROM Code Download**

1. **Configure the PC communication package** to be identical to the factory configuration of port A2, according to the following table:

Communications Software	Remote Modem Attached to Unit
8-bit	8-bit
No parity	No parity
Software flow control (XON/XOFF)	Software flow control (XON/XOFF)
Transparent (or Raw) ASCII or Binary	No echo
9600 baud	No result codes
	Dial up mode (Auto-Answer)
	Asynchronous mode
	Follow remote carrier

**Note:** Any interconnect or synchronous links existing at the A2 port must be disconnected.

2. **Set the communication package to run in terminal emulation mode.**
3. **Attach the PC to A2 or the NMS Command Port** with an appropriate straight-through cable.
4. **Reset the unit.** Either:
  - Power the unit off and then on, or
  - Simultaneously depress the Left (←) and EXE buttons on the unit's LCD/Keypad, if it has one. Hold these buttons down for 3 seconds.

The indicators will show the startup status as described in the "Startup and Operation" section of your *User's Manual*.

**Note:** When the A1 indicator is on solid and the Integration unit issues the message START DOWNLOAD, the unit is ready to receive the download.

5. **Switch the communication package to file transfer mode and send the download file.** The A1 light will blink during the file transfer. The indicator message code patterns for normal code downloads are as follows:

Indicators	Style	Unit Message, or Summary
A1	Solid	START DOWNLOAD
A1	Blinking	TRANSFER GOING ON
All but A1	Solid	DOWNLOAD COMPLETE

If there are any errors during the download, the unit will issue one of the following messages:

Indicators	Messages
A2+A1	FLASH WRITE ERROR!! or WRONG HARDWARE PLATFORM!!
A3+A2+A1	INVALID DOWNLOAD FILE!!
A4+A3+A2+A1	DOWNLOAD FILE CHECKSUM ERROR!!

**Note:** The flash image written to during the attempted download will be erased after the next reset if an error occurs during download.

6. **When the transfer is complete,** the unit will issue the message “Input file received. Reset.” All indicators — except A1 — should be on. The unit will reset automatically after approximately 30 seconds. It will come up running the newly downloaded software.

# LAN-Based Code Download 3

## Overview

The Integration Router Module can download its operating software from a server running Bootp and TFTP, or TFTP only. Bootp and TFTP download is enabled by default. You must turn off Bootp in order to perform a TFTP only download.

Bootp and TFTP are TCP/IP protocols. To perform a code download using these protocols requires some setup on the server. As server configurations vary extensively, the following procedures are only approximate examples. To accomplish this form of code download, you must be experienced in TCP/IP LAN administration. *If you are unsure of how to set up a server to transfer files using Bootp/TFTP, you should perform the code download using a PC connected to a unit on the WAN.*

**IMPORTANT:** The server to be used for downloading the Integration Router software must be on the same LAN segment (same network number) as the Integration Router itself. You **cannot** perform the download from:

- A server on a LAN segment that is located across the WAN from the Integration Router
- A LAN segment with a different network number that is accessed using a router

## Code Download Using Bootp/TFTP

### Overview

The procedure for performing a code download using both Bootp and TFTP involves four steps:

1. Note the Integration Router Module's Hardware Address
2. Set up the Bootp Server
3. Set up the TFTP Server
4. Initiate the Code Download

Additionally, if it is necessary to restart a Bootp/TFTP code download, you must perform:

5. Restart the Bootp/TFTP Code Download

**Note:** The following procedure describes a Sun workstation running SunOS 4.1.3 as the Bootp/TFTP server. Configuring other machine types to be Bootp/TFTP servers may differ in the details, but the essential steps are basically the same.

## Step 1: Note the Integration Router Module's Hardware Address

For future reference, make a note of the Integration Router Module's hardware address (Ethernet address) using the following procedure:

1. Connect to class **node\_ID/\$CMD** (where *node\_ID* is the name of the unit whose Integration Router Module is to receive the code download). In this example, we will connect to the \$CMD facility on the remote node named *tpnet*:

```
ENTER CLASS: tpnet/$cmd
PASSWORD
```

**Note:** The local node requires only \$cmd be entered at the ENTER CLASS: prompt.

The Command Facility Main Menu should be displayed on your terminal.

2. Select **INTEGRAL LAN LOCAL MODE ACCESS** from the Command Facility Main Menu.
3. Specify the slot containing the Integration Router at the ENTER MODULE LOCATION prompt. In this example, we will use module location B:

```
ENTER MODULE LOCATION [B-E] (^X TO ABORT):b
```

4. At the Enter username> prompt, enter a user name:

```
Enter username> Dave
Local>
```

5. Enter the following command:

```
Local> SHOW SERVER
```

6. Copy down the hardware address displayed on the screen.
7. Log out of the Integration Router Module's command line interface:

```
Local> LOGOUT
```

8. Exit the Command Facility. Select EXIT Command Facility from the Command Facility Main Menu.

If the PC is connected to an intermediate unit (i.e., not physically connected to the unit whose Integration Router Module is being downloaded), then exit from that unit's Command Facility Main Menu, as well.

## Step 2: Set Up the Bootp Server

You will need to set up the Bootp server that resides on the download host system. This usually involves the following:

1. **Create (or modify) a configuration file** that contains information about the devices Bootp is to respond to. This configuration file contains a minimum of the following parameters for each device:

- Hardware (Ethernet) address of the device
  - IP address of the device
  - Network name of the device
  - Name of the file to download to the device
- 22380A00.IRM for Marathon and STADIA Integration Hub units
  - 22390A00.IRM for NetRunner units

Here is a sample file used in Sun workstations, called `/etc/bootptab`:

```
micom:ht=1:ha=0040c5010101:ip=199.30.19.214:hd=/tftpboot:bf=22390A00.IRM:
micom:ht=1:ha=0040c5100c3f:ip=199.30.19.215:hd=/tftpboot:bf=22390A00.IRM
```

↑ Network name of the device

↑ Device's hardware type (Integration Router Module = 1)

↑ Device's hardware address in hexadecimal

↑ Device's IP address in decimal

↑ Directory for download file

↑ File to download

2. **Start the Bootp server process.** This may be a specific server process always running on the download host system, or, the server process may be invoked on an as needed basis (as in the case of Sun workstations). Here is the line for Sun workstations in the `/etc/inetd.conf` file for starting a Bootp server process:

```
bootps dgram udp wait root /etc/bootpd bootpd
```

↑ Service name

↑ Socket type

↑ Protocol

↑ Wait status

↑ User

↑ Server program

↑ Arguments

Once the necessary information is included in the `/etc/inetd.conf` file, the `inetd` process is signaled to read the `inet.conf` file. (Normally, `inetd` reads the file during server bootup.)

### Step 3: Set Up the TFTP Server

You will need to set up the TFTP server that resides on the download host system. This involves two steps.

1. **Copy the appropriate .IRM file** from the *LAN FlashPak Code Download Software* diskette to the TFTP directory:

```
NetRunner:          22390A00.IRM
Marathon/STADIA:   22380A00.IRM
```

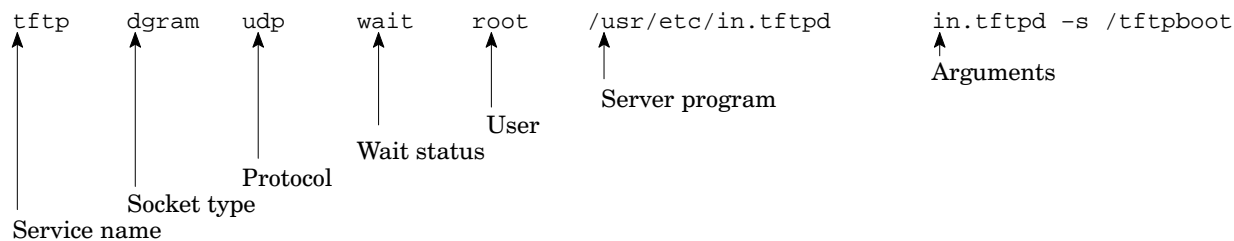
For Sun workstations, the default TFTP directory is /tftpboot.

Make sure the TFTP directory and the download file have owner, group, and world read permissions. For example:

```
<root>troll:/> cd /tftpboot
<root>troll:/tftpboot> ls -l
total 2339
drwxrwxrwx  3 root          512 Mar 28 12:51 ./
drwxr-xr-x 21 root          1024 Mar 29 09:03 ../
-rw-rw-r--  1 root          519128 Mar 28 15:27 22390A00.IRM
```

The .IRM files are in binary format. You must use the binary mode when transferring these files from the diskette to the download host system.

2. **Start the TFTP server process.** This may be a specific server process always running on the download host system, or the server process maybe invoked on an as needed basis (as in the case of Sun workstations). Here is the line for Sun workstations in the /etc/inetd.conf file for starting a TFTP server process:



Once the necessary information is included in the `/etc/inetd.conf` file, the `inetd` process is signaled to read the `inetd.conf` file.

Since the `-s` option (for security) is appended to the `in.tftpd` argument in the `tftp` line of the `/etc/inetd.conf` example above, the TFTP daemon will require the directory to match that specified in the line (`/tftpboot`). In this case, the `/tftpboot` directory is expected to be a subdirectory under the default TFTP directory. Thus, it is necessary to create a subdirectory called `tftpboot` under the `/tftpboot` directory and set up a link in that subdirectory to the download file in the parent directory. For example:

```
<root>troll:/> cd /tftpboot
<root>troll:/tftpboot> ls -l
total 2339
drwxrwxrwx  3 root          512 Mar 28 12:51 ./
drwxr-xr-x 21 root          1024 Mar 29 09:03 ../
-rw-rw-r--  1 root        519128 Mar 28 15:27 22390A00.IRM
drwxrwxr-x  2 root          512 Mar 22 15:42 tftpboot/
<root>troll:/tftpboot> cd tftpboot
<root>troll:/tftpboot/tftpboot> ls -l
total 6
drwxrwxr-x  2 root          512 Mar 22 15:42 ./
drwxrwxrwx  3 root          512 Mar 28 12:51 ../
lrwxrwxrwx  1 root           11 Mar 22 15:42 22390A00.IRM -> ../22390A00.IRM
<root>troll:/tftpboot/tftpboot>
```

#### Step 4: Initiate the Code Download Using Bootp/TFTP

1. Connect to class `node_ID/$CMD` (where `node_ID` is the name of the unit whose Integration Router Module is to receive the code download). In this example, we will connect to the \$CMD facility on the remote node named `tpnet`:

```
ENTER CLASS: tpnet/$cmd
ENTER CLASS PASSWORD
```

**Note:** The local node requires only \$cmd be entered at the ENTER CLASS: prompt.

2. Select **Reset** → **Integral LAN** from the Command Facility Main Menu.
3. Specify the module location containing the Integration Router Module at the ENTER MODULE LOCATION prompt. In this example, we will use module location B:

```
ENTER MODULE LOCATION [B-E] (^X TO ABORT):b
```

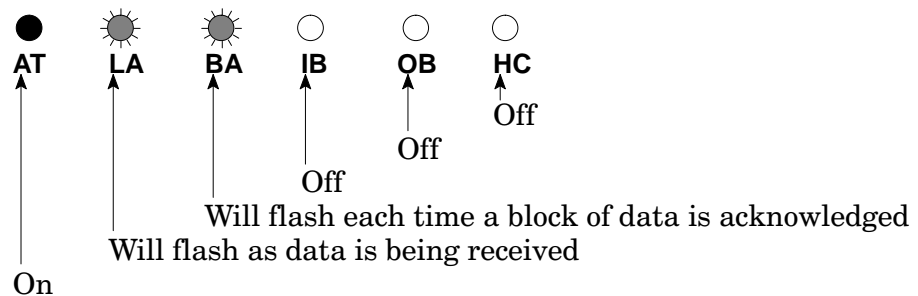
4. Select **Code Download: LAN to LAN** from the Integral LAN Reset Menu.

The Integration Router Module will reset and broadcast a Bootp request to the LAN. It is up to the Bootp server to respond to the Integration Router Module's Bootp request and initiate the code download.

During the download, the Integration Router Module will cause various messages to be displayed on the LCD (if there is one) and on a \$CMD terminal (if connected). On the \$CMD terminal, a normal code download will cause the following message sequence (where TPNET is the node name):

```
00:05:12 TPNET [B] LAN RESET: LAN->LAN RELOAD
00:05:21 TPNET [B] LAN MODULE UP
00:05:23 TPNET [B] Boot 144-0153-0A
00:05:32 TPNET [B] Requesting BOOTP:
00:05:40 TPNET [B] Erasing Flash...
00:10:22 TPNET [B] Done
00:10:40 TPNET [B] Requesting TFTP:
00:10:55 TPNET [B] TFTP downloading..
00:12:06 TPNET [B] Adding checksums..
00:12:20 TPNET [B] TFTP Load Success
```

The indicators on the LAN module itself will display indications of the code download:



Once the code download is successful, the Integration Router Module will reset and execute the new code:

```
00:08:26 TPNET [B] LAN RESET: VIA LAN MODULE
00:08:32 TPNET [B] LAN MODULE UP
```

## Step 5: Restart the Bootp/TFTP Code Download (If Necessary)

If the Bootp/TFTP code download fails and it is necessary to restart the code download, proceed as follows:

1. (If the Reset Menu is already displayed, skip this step.) At the Command Facility Main Menu, select **Reset** → **Integral LAN**.
2. Specify the slot containing the Integration Router Module. In this example, we will use module location B:  

```
ENTER MODULE LOCATION [B-E] (^X TO ABORT):b
```
3. Select **Current Configuration** from the Integral LAN Reset Menu.
4. When the message LAN MODULE UP is displayed, restart the code download beginning with step 4, *Initiate the code download*, on page 3-6.

## Bootp/TFTP Code Download Messages

If the download is not successful, the reason for the failure will be indicated by the display of one or more of the following messages:

File header read failed.

The header data received for the code download file was not correct for the Integration Router. Make sure that you have selected the correct download file, then reset the Integration Router and restart the download.

File load failed, *nnnnnn* bytes loaded.

Anytime the code download data transfer starts, but does not complete successfully, this message will be displayed. The number of bytes actually transferred will be displayed in the field shown as *nnnnnn* above. The reason for the file load failure will be indicated by other displayed messages.

No Bootp Reply

There was no response to the Integration Router's Bootp request broadcast. Check the Integration Router's LAN connection and ability to reach the Bootp server. The Bootp server must be on the same logical LAN segment as the Integration Router. Also, verify the configuration of the Bootp server. The server must be configured correctly in order to respond to Bootp requests. There must be an entry in the server's Bootp configuration file that contains the Integration Router's Ethernet hardware address and includes the information that must be in the Bootp reply (the Internet Address assigned to the Integration Router, the directory path for TFTP downloads, and the name of the code download file). After correcting the source of the problem, reset the Integration Router and restart the download.

#### TFTP Access Denied

The Integration Router does not have permission to access the code download file on the Bootp/TFTP or TFTP server. Verify that the TFTP directory, the code download file, and the link to the file have owner, group, and world read permissions. Since the Integration Router will automatically continue trying to access the file in order to successfully complete the code download, all you have to do is access the Bootp/TFTP or TFTP server as superuser and adjust the permissions of the TFTP directory, download file, and link as required. On the next retry of the code download, the Integration Router should be able to access the file and complete the code download without any further intervention.

#### TFTP Bad Checksum

This could be one of two failures:

- The data received was corrupted.
- There was no response to the Integration Router's TFTP GET request by the Bootp/TFTP or TFTP server.

You should check the Bootp/TFTP server to ensure that it is configured correctly to respond to TFTP requests. Make sure there is an entry in the server's TFTP configuration file that contains the directory for TFTP downloads. After correcting the source of the problem, reset the Integration Router and restart the download.

#### TFTP No Such File

The file that the Integration Router requested to download from the Bootp/TFTP server does not exist. The Integration Router should have received the name and directory path of the file as part of the Bootp/TFTP server's response to the Integration Router's Bootp request. There may be a mismatch between the file name specified in the Bootp configuration file and the file name in the TFTP directory. You should verify the following on the Bootp/TFTP server:

- the Bootp configuration file contains the correct name and directory path of the file that the Integration Router should download,
- the TFTP configuration file specifies the correct directory for the code download file,
- the code download file is present in the TFTP directory and the appropriate permissions and links are set up.

After verifying the configuration of the Integration Router and TFTP server or Bootp/TFTP server, reset the Integration Router, then restart the download.

## Code Download Using TFTP

### Overview

The procedure for performing a code download using TFTP involves four steps:

1. Assign an IP Address to the Integration Router Module
2. Configure the Integration Router Module
3. Set up the TFTP Server
4. Initiate the Code Download

Additionally, if the TFTP code download fails and it is necessary to restart code download, you must perform:

5. Restart the TFTP Code Download

- Notes:**
- The following procedure provides steps to be used with a Sun workstation running SunOS 4.1.3 as the TFTP server. Configuring other machine types to be TFTP servers may differ in the details.
  - If the Integration Router Module is cold started (reset to factory default values), you will not be able to perform a TFTP-only code download. A cold start will clear all TFTP settings (the IP address of the Integration Router Module, the IP address of the load host, and the path and file name of the code download file).
  - If the Integration Router Module has been cold started, you must perform the code download using either Bootp/TFTP, or via a Communications Control Module asynchronous port.

## Step 1: Assign an IP address to the Integration Router Module

If the Integration Router Module does not already have an IP address, use the following procedures.

1. Connect to class **node\_ID/\$CMD** (where *node\_ID* is the name of the unit whose Integration Router Module is to receive the code download). In this example, we will connect to the \$CMD facility on the remote node named *tpnet*:

```
ENTER CLASS: tpnet/$cmd
PASSWORD
```

**Note:** The local node requires only \$cmd be entered at the ENTER CLASS: prompt.

The Command Facility Main Menu should be displayed on your terminal.

2. Select **INTEGRAL LAN LOCAL MODE ACCESS** from the Command Facility Main Menu.
3. Specify the module location containing the Integration Router Module at the ENTER MODULE LOCATION prompt. In this example, will use module location **B**:

```
ENTER MODULE LOCATION [B-E] (^X TO ABORT):b
```

4. At the Enter username> prompt, enter a user name:

```
Enter username> Dave
Local>
```

5. Enter the following command string at the Local> prompt:

```
Local> DEFINE SERVER IPADDRESS ip_address
```

where: *ip\_address* is the IP address in decimal, delimited by periods, to be assigned to this Integration Router Module. An example command would be:

```
DEFINE SERVER IPADDRESS 199.30.19.214
```

## Step 2: Configure the Integration Router Module

To configure the Integration Router Module with the TFTP host's IP address and the directory path of the download file on the host, perform the following steps.

1. **Enter the TFTP host's IP address** using the following command string:

```
Local> DEFINE SERVER LOADHOST ip_address
```

where: *ip\_address* is the IP address of the TFTP host in decimal, delimited by periods. An example command would be:

```
DEFINE SERVER LOADHOST 199.30.19.46
```

2. **Enter the directory path and filename of the download file** on the TFTP host using the following command string:

```
Local> DEFINE SERVER SOFTWARE /path/filename
```

where:

*/path/* is the directory path on the TFTP host of the download file, and

*filename* is the name of the file:

NetRunner:	22390A00.IRM
Marathon/STADIA:	22380A00.IRM

The path and filename are case sensitive. The file name extension must be .IRM on the server. However, the filename extension is not entered on the DEFINE SERVER SOFTWARE command line. An example command for downloading to an Integration Router Module in a NetRunner would be:

```
DEFINE SERVER SOFTWARE /tftpboot/22390A00
```

3. **Set Bootp to DISABLED** on the Integration Router Module using the following command string:

```
Local> DEFINE SERVER BOOTP DISABLED
```

4. **Reset the Integration Router Module** to put the TFTP configuration into effect, using the following command string:

```
Local> INITIALIZE SERVER DELAY 0
```

After the Integration Router resets, the Command Facility Main Menu should be displayed on your terminal.

5. **Exit the Command Facility.** Select **Exit Command Facility** from the Command Facility Main Menu.

If the PC is connected to an intermediate unit (i.e., not physically connected to the unit whose Integration Router is being downloaded), then exit from that unit's Command Facility Main Menu, as well.

### Step 3: Set Up the TFTP Server

1. **Copy the appropriate .IRM file** from the *LAN FlashPak Code Download Software* diskette to the TFTP directory:

```
NetRunner:                22390A00.IRM
Marathon/STADIA:         22380A00.IRM
```

For Sun workstations, the default TFTP directory is /tftpboot.

Make sure the TFTP directory and the download file have owner, group, and world read permissions. For example:

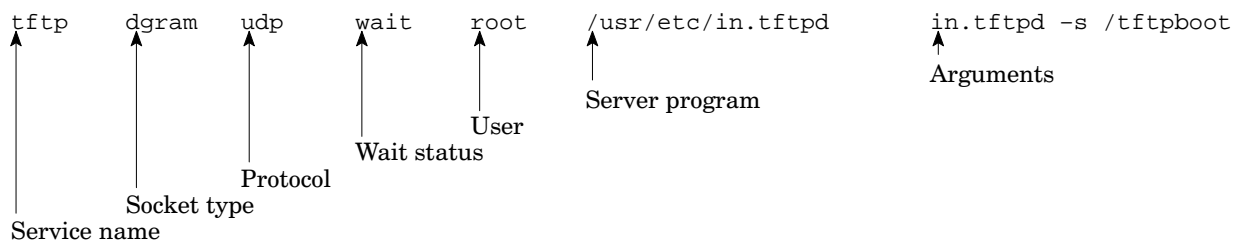
```
<root>troll:/> cd /tftpboot
<root>troll:/tftpboot> ls -l
total 2339
drwxrwxrwx  3 root          512 Mar 28 12:51 ./
drwxr-xr-x 21 root        1024 Mar 29 09:03 ../
-rw-rw-r--  1 root        519128 Mar 28 15:27 22390A00.IRM
```

↑     ↑     ↑  
 Owner Read  
 Group Read  
 World Read

The .IRM files are in binary format. You must use the binary mode when transferring this file from the diskette to the download host system.

2. **Start the TFTP server process.** This may be a specific server process always running on the download host system, or, the server process maybe invoked on an as needed basis (as in the case of Sun workstations).

Here is the line for Sun workstations in the /etc/inetd.conf file for starting a TFTP server process:



Once the necessary information is included in the `/etc/inetd.conf` file, the `inetd` process is signaled to read the `inetd.conf` file.

Since the `-s` option (for security) is appended to the `in.tftpd` argument in the `tftp` line of the `/etc/inetd.conf` example above, the TFTP daemon will require the directory to match that specified in the line (`/tftpboot`). In this case, the `/tftpboot` directory is expected to be a subdirectory under the default TFTP directory. Thus, it is necessary to create a subdirectory called `tftpboot` under the `/tftpboot` directory and set up a link in that subdirectory to the download file in the parent directory.

For example:

```
<root>troll:/> cd /tftpboot
<root>troll:/tftpboot> ls -l
total 2339
drwxrwxrwx  3 root          512 Mar 28 12:51 ./
drwxr-xr-x 21 root          1024 Mar 29 09:03 ../
-rw-rw-r--  1 root        519128 Mar 28 15:27 22390A00.IRM
drwxrwxr-x  2 root          512 Mar 22 15:42 tftpboot/
<root>troll:/tftpboot> cd tftpboot
<root>troll:/tftpboot/tftpboot> ls -l
total 6
drwxrwxr-x  2 root          512 Mar 22 15:42 ./
drwxrwxrwx  3 root          512 Mar 28 12:51 ../
lrwxrwxrwx  1 root           11 Mar 22 15:42 22390A00.IRM -> ../22390A00.IRM
<root>troll:/tftpboot/tftpboot>
```

## Step 4: Initiate the Code Download

1. Connect to class **node\_ID/\$CMD** (where *node\_ID* is the name of the unit whose Integration Router is to receive the code download). In this example, we will connect to the \$CMD facility on the remote node named **tpnet**.

```
ENTER CLASS: tpnet/$cmd
ENTER CLASS PASSWORD
```

**Note:** The local node requires only \$cmd be entered at the ENTER CLASS: prompt.

2. Select **Reset Integral LAN** from the Command Facility Main Menu.
3. Specify the module location of the Integration Router Module at the ENTER MODULE LOCATION prompt. In this example, we will use module location B:

```
ENTER MODULE LOCATION [B-E] (^X TO ABORT):b
```

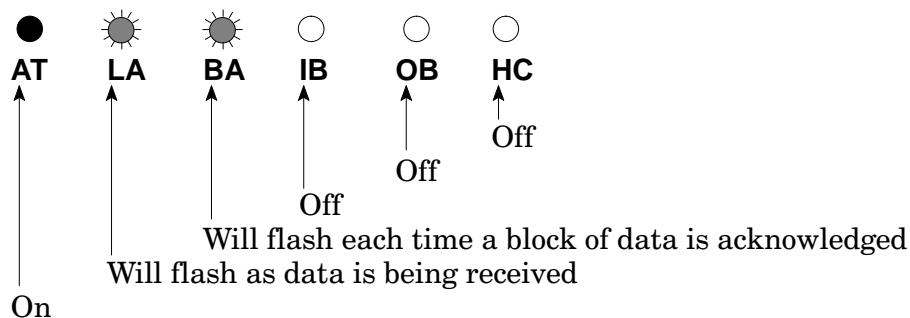
4. Select **Code Download: LAN to LAN** from the Integral LAN Reset Menu.

The Integration Router Module will reset and transmit a TFTP GET request to the download host system. It is up to the TFTP server to respond to the Integration Router Module's GET request and initiate the code download.

During the download, the Integration Router Module will cause various messages to be displayed on the LCD (if there is one) and on a \$CMD terminal (if connected). On the \$CMD terminal, a normal code download will cause the following message sequence:

```
00:05:12 TPNET [B] LAN RESET: LAN->LAN RELOAD
00:05:21 TPNET [B] LAN MODULE UP
00:05:23 TPNET [B] Boot 144-0153-0A
00:05:40 TPNET [B] Erasing Flash...
00:10:07 TPNET [B] Done
00:10:40 TPNET [B] Requesting TFTP:
00:10:55 TPNET [B] TFTP downloading..
00:12:06 TPNET [B] Adding checksums..
00:12:20 TPNET [B] TFTP Load Success
```

The indicators on the LAN module itself will display indications of the code download:



Once the code download is successful, the Integration Router will reset and execute the new code:

```
00:08:26 TPNET [B] LAN RESET: VIA LAN MODULE
00:08:32 TPNET [B] LAN MODULE UP
```

## Step 5: Restart a TFTP Code Download (If Necessary)

If the TFTP code download fails and it is necessary to restart the code download, proceed as follows:

1. (If the Reset Menu is already displayed, skip this step.) At the Command Facility Main Menu, select **Reset**.
2. Specify the slot containing the Integration Router Module at the ENTER MODULE LOCATION prompt. In this example, we will use module location B:

```
ENTER MODULE LOCATION [B-E] (^X TO ABORT):b
```

3. Select **Current Configuration** from the Integral LAN Reset Menu.
4. When the message LAN MODULE UP is displayed, restart the code download beginning with step 7, *Initiate the code download*, on page 3-14.

## TFTP Code Download Messages

If the download is not successful, the reason for the failure will be indicated by the display of one or more of the following messages:

```
File header read failed.
```

The header data received for the code download file was not correct for the Integration Router. Make sure that you have selected the correct download file, then reset the Integration Router and restart the download.

```
File load failed, nnnnnn bytes loaded.
```

Anytime the code download data transfer starts, but does not complete successfully, this message will be displayed. The number of bytes actually transferred will be displayed in the field shown as *nnnnnn* above. The reason for the file load failure will be indicated by other displayed messages.

```
TFTP Access Denied
```

The Integration Router does not have permission to access the code download file on the TFTP server. Verify that the TFTP directory, the code download file, and the link to the file have owner, group, and world read permissions. Since the Integration Router will automatically continue trying to access the file in order to successfully complete the code download, all you have to do is access the TFTP server as superuser and adjust the permissions of the TFTP directory, download file, and link as required. On the next retry of the code download, the Integration Router should be able to access the file and complete the code download without any further intervention.

**TFTP Bad Checksum**

This could be one of two failures:

- The data received was corrupted.
- There was no response to the Integration Router Module's TFTP GET request by the TFTP server.

You should check the Integration Router Module's LAN connection and ability to reach the TFTP server. The server must be on the same logical LAN segment as the Integration Router Module. Also, check the configuration of the TFTP server. The server must be configured correctly in order to respond to TFTP requests. There must be an entry in the server's TFTP configuration file that contains the directory for TFTP downloads. After correcting the source of the problem, reset the Integration Router Module and restart the download.

**TFTP No Such File**

The file that the Integration Router Module requested to download from the TFTP server does not exist. Make sure you have entered the correct directory and filename using the DEFINE SERVER SOFTWARE command. Also, you should verify the following on the TFTP server:

- The TFTP configuration file specifies the correct directory for the code download file,
- The code download file is present in the TFTP directory and the appropriate permissions and links are set up.

After verifying the configuration of the Integration Router Module and TFTP server, reset the Integration Router Module, then restart the download.

# Flash Status and Control Commands **A**

Menu items and displays have been added to the Command Facility to accommodate code download. These commands are outlined below.

For Integration unit Communications Control Module, voice channel, T1 Access Module and Integration Router Module FlashPaks, commands may be issued as described below, starting from the Command Facility Main Menu.

Table A-1. Flash Status and Control Commands

	Action	CCM Result	Voice/TAM Result	IRM Result
<b>Status</b>	Select <b>Status/Statistics</b> → <b>PROM ID</b> in the Command Facility Main Menu.	Displays information on the flash memory banks, including the date and time stamp of installed software.  An empty bank will display as ERASED. The PROM ID of the software currently running is displayed separately.  If a bank location is not available, i.e., the PROM in which it resides is not installed, the bank will be described in the display as NOT INSTALLED.		
	Select <b>Status/Statistics</b> → <b>Voice/Fax Status</b>		Displays the contents of the channels' Flash EPROM.  Unlike the CCM module, which has two banks of flash memory, each voice channel has a single bank of flash memory backed up with voice software on the EPROM.  The voice status option will show the PROM number and revision of software in the Flash EPROM. If there is no software in the Flash EPROM, its status will show as ERASED and the PROM ID of the software in the EPROM will be displayed.  <b>For TAMS</b> DS1 Solid Green Operational. DS5 Solid Red Code download required. DS1 Off DS1 Flashing Green Code download in progress.	N/A
<b>Configuration</b>	Select <b>Configure Local Nodes</b> → <b>Download Parameters</b> → <b>\$DL D Password</b> in the Command Facility Main Menu.		Allows you to set the download facility password.	
	Select <b>Configure Local Nodes</b> → <b>Download Parameters</b> → <b>CCM Bank to Activate with Reset</b> from the Command Facility Main Menu.	Selects the proper flash bank to use on reset: <ul style="list-style-type: none"> <li>Flash Bank 1</li> <li>Flash Bank 2</li> <li>The most recent version (as defined by release date and time) of software in the two flash banks. (Default.)</li> </ul>	N/A	N/A
	Select <b>Configure Local Nodes Download Parameters</b> → <b>\$DL D Activity Timeout (Seconds)</b> in the Command Facility Main Menu.		Sets the \$DL D Activity Timeout interval in seconds. The default is 120 seconds.	
<b>Erase</b>	Select <b>Configure Local Nodes</b> → <b>Download Parameters</b> → <b>Erase CCM Flash</b> or <b>Erase Voice Flash</b> in the Command Facility Main Menu.	Erases a specified bank of flash memory in the CCM FlashPak or LAN/WAN Module.	Erases flash memory in the specified-channel's flash EPROM.	N/A
Key:				
	CCM = Communications Control Module			
	UVM = Universal Voice/Fax Module			
	DVM = Digital Voice Module			
	TAM = T1 Access Module			
	IRM = Integration Router Module			

**Table A-1. Flash Status and Control Commands Cont.)**

	<b>Action</b>	<b>CCM Result</b>	<b>Voice/TAM Result</b>	<b>IRM Result</b>
<b>Reset</b>	Select <b>Reset</b> → <b>Node: Bank Selected Software</b> from the Command Facility Main Menu. Choose from: <ul style="list-style-type: none"> <li>• Default Values</li> <li>• Current Configuration</li> </ul>	Resets using the software in the selected CCM software bank. Configures the unit reset to: <ul style="list-style-type: none"> <li>• Return to the factory default configuration.</li> <li>• Maintain the current user-defined configuration.</li> </ul>	N/A	N/A
Key:				
CCM	= Communications Control Module			
UVM	= Universal Voice/Fax Module			
DVM	= Digital Voice Module			
TAM	= T1 Access Module			
IRM	= Integration Router Module			

# The Boot PROM Startup Process B

The Communications Control Module and LAN/WAN Module boot PROM follows this process on a restart:

1. **Performs basic diagnostics on the Communications Control Module and the EPROM memory.** (Refer to your Integration unit's *User's Manual* and/or *Command Facility Reference Guide* for a detailed description of this process.)

The status of the diagnostics is displayed on the indicators as shown in the chart below:

Indicators	Integration Unit Messages
B0	Testing DRAM on the Communications Control Module.
B0+A6	Testing FlashPak static RAM.
B0+A6+A5	Testing code space static RAM.

2. **Verifies that at least one flash bank has a load image.** If there is no image in either flash bank, the A1 indicator will come on and you must perform the initial load procedure described in "Blank Flash EPROM Code Download" on page 2-30.
3. **If there are two flash banks containing valid software, chooses which one to use.** This will normally be the most recent according to the date/time stamp. However, the user may have specified a particular flash bank (1 or 2). (These EPROM choices are stored in CMOS as described in the "Flash Status and Control Commands" on page A-1.)

**Note:** The Flash EPROM selected according to CMOS contents may be overridden. See "Appendix C — Overriding the Selected Flash Bank" on page C-1.

4. **Decompresses the code(for dual** (for dual dual flash bank FlashPaks only).
5. **Moves the code to static RAM for execution** (for dual flash bank FlashPaks only). The indicators will display the following pattern during this stage:

B0+A6+A5+A4

after which A4 will be blinking.

6. **Transfers control to the operational software.**

# Overriding the Selected Flash Bank C

## Overview

When there are two flash memory banks containing valid Communications Control Module or LAN/WAN system software, the bank to be used is specified in CMOS. Normally, this is the bank containing the most recent software (according to the time/date stamp on the EPROM file).

**Note:** The default image for loading can be changed via the command facility (or NETMan). Refer to the "Flash Status and Control Commands" section on page A-1 for details.

The image to be used can be overridden during startup by using the front panel or by entering a command into the Command Port or A2. This feature is useful when it is necessary to switch back to the previous version of code should the version in the selected bank not run properly.

## Procedure: Override the Selected Flash Memory Bank

To override the flash memory bank specified in CMOS and load Communications Control Module software from the other flash bank, perform either of the following procedures:

- **Through a local terminal or PC connection to A2 or the Command Port.**
  1. **Set up the terminal or terminal emulation software.** The proper settings are:
    - 9600 baud
    - no parity
    - 8 data bits
    - 1 stop bit
    - Transparent or Raw ASCII (for PROCOMM PLUS)
  2. **Reset the unit** by either:
    - Powering the unit off and then on, or
    - Simultaneously depressing the Left (←) and EXE buttons on the unit's LCD/Keypad.
  3. **Type the override command, *OVR* at the \$DLD> prompt.** The \$DLD> prompt will appear while the code is being moved to RAM.

**Note:** When the A4 indicator comes on, the image from the secondary Communications Control Module flash image is being loaded into RAM.

- **Through the LCD/Keypad** (for 5-slot units only).
  1. **Reset the unit** by either:
    - Powering the unit off and then on, or
    - Simultaneously depressing the Left (←) and EXE buttons on the unit's LCD/Keypad.
  2. **Depress the Down (↓) button** on the unit's LCD/Keypad. Do this immediately after releasing the Left (←) and EXE buttons. Continue to depress the Down button until the A4 indicator comes on.

**Notes:**

- The indicators will show the startup status as described in the "Startup and Operation" section of your Integration Unit's *User's Manual*.
- When the A4 indicator comes on, the image from the secondary Communications Control Module or LAN/WAN flash image is being loaded into RAM.

## READER'S COMMENTS

MICOM welcomes your evaluation of this manual and any suggestions you may have. These help us to improve the quality and usefulness of our publications.

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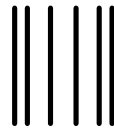
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