

# Quickstart Guide to Using the TS-9300 with the EPC Update Utility

---

## Introduction

The TS-9300 is an 8-bit PC/104 expansion card containing 512KB of Flash memory and an M-Systems DiskOnChip Flash disk. Through the use of a proprietary signal on the PC/104 bus (carried over the unused pins DRQ3 and DACK3), the TS-9300 can 'bootstrap' a Technologic Systems Embedded PC with an erased or corrupted BIOS.

Once the EPC/TS-9300 has booted, a DOS utility (FLASHUP) can be used to selectively reprogram the EPC BIOS, DOS kernel, Flash disk, and CMOS memory contents from binary images stored on the DiskOnChip. FLASHUP is also used to create the image files from a live EPC, enabling you to clone custom EPC installations for product manufacturing and test. Source code for FLASHUP is included to allow easy customization.

The FLASHUP command line syntax is:

```
FLASHUP (/CREATE|/BLAST) {BIOS{=F1}} {DOS{=F2}} {DISK{=F3}} {CMOS{=F4}} {RTC}
```

You must choose one of two actions:

```
/CREATE    Copy from the EPC into image files in the current directory
/BLAST    Copy from image files into the EPC system.
```

And choose any combination of sections:

```
BIOS      Create / restore the BIOS
DOS       Create / restore the DOS
DISK      Create / restore the SSD (solid state disk)
CMOS      Create / restore the CMOS settings
RTC       Copy the time and date from a TS-9200 boot board
```

Any combination of sections can be specified. Filenames can be specified for each of the sections, but are optional. If a section is specified without a filename, it defaults to

```
<4 digit model number><section name>.BIN
```

For example, default filenames for a TS-2200 are 2200BIOS.BIN, 2200DOS.BIN, 2200DISK.BIN, and 2200CMOS.BIN.

## Updating an EPC (BLAST)

To update an EPC from image files, the following syntax is used:

```
FLASHUP /BLAST {BIOS{=F1}} {DOS{=F2}} {DISK{=F3}} {CMOS{=F4}} {RTC}
```

Any combination of BIOS, DOS, DISK, CMOS, and RTC can be specified. Filenames can be specified for each of the sections, but are optional.

The procedure for updating an EPC is as follows:

1. If this is a virgin board or one on which the BIOS has been corrupted (the red LED never even blinks at poweron) then you must use a TS-9300 or TS-9200 to bootstrap the EPC to a running state. Live boards can be updated directly by downloading images and FLASHUP to the EPC and running them. In either case, FLASHUP and the update images must be accessible from the EPC.
2. Change to the directory where the update images are stored. By default, this is 'C:\IMAGES'.
3. Run FLASHUP, specifying the sections you are updating. Specify filenames if you are not using the defaults.
4. Power off, remove the boot board (if present) and you are done.



## Creating Update Images

To create the update images, the following syntax is used:

```
FLASHUP /CREATE {BIOS{=F1}} {DOS{=F2}} {DISK{=F3}} {CMOS{=F4}}
```

Any combination of BIOS, DOS, DISK, and CMOS can be specified. When creating the images, FLASHUP will NOT overwrite a file that already exists. You must delete, rename, or move the old copy first.

The procedure for creating update images is as follows:

1. Configure a master EPC from which the clones will be copied. In particular, make sure the Flash disk contains all necessary files, and the CMOS boot options are correct.
2. Install the TS-9300 boot board and power up the EPC.
3. Change to the directory where the update images will be stored. By default, this is 'C:\IMAGES'.
4. If you are replacing a previous set of images, rename or move the old copies of the files. FLASHUP will not overwrite files.
5. Run FLASHUP, specifying the sections for which you are creating images. Specify filenames if you don't want to use the defaults.
6. Power off, remove the boot board (if present) and you are done.

## Revision History - FLASHUP.CPP

19990705	1.0	cjd	Started
19990901	1.1	cjd	Modified and updated to read Flash image from a file. Renamed to FLASHUP
19990905	1.2	cjd	Added ability to write image of Flash disk to a file.
19990914	1.3	cjd	Added ability to selectively create or restore Flash image files
20000501	1.4	cjd	Cmdline improved. Filenames can now be specified on the cmdline, as well as a prefix
20000616	1.5	cjd	Simplified cmdline - no prefix crap.
20000713	1.6	cjd	Added TS-2250
20000718	1.7	cjd	Added CMOS and RTC options, updated docs



---

### Technologic Systems

16610 East Laser Drive, Suite 10  
Fountain Hills, AZ 85268  
Tel: (480) 837-5200  
Fax: (480) 837-5300  
Email: [info@embeddedx86.com](mailto:info@embeddedx86.com)  
Web: <http://www.embeddedx86.com/>

Revision Date: February 23, 2001