

# SVN Box

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## 1 Abstract

The SVN Box is a small stand alone Subversion server. Subversion is an open source version control system, which is a replacement for CVS. More information about subversion is available at <http://subversion.tigris.org/>

Subversion commands start with 'svn', hence the name "SVN Box". It is designed to be a small network appliance which takes up minimal space and power. Connecting it to the network allows multiple users to share source code, text files, and binary files, while maintaining a complete change history of all of the files. Users can check out the latest version of a project or any previous revision. This functionality means that the projects files are also backed up to the SVN box rather than the user's local machines.

The SVN Box is based around an ARM processor, packaged on a PC104 card by [Technologic Systems](#). The SVN Box is smaller than 2.5 x 4.5 x 5.5 inches, consumes less than 2W of power, and stores 1 to 4 gigs of files (depending on what size CF card you install). The cost is \$325 (including a 1 Gig CF Card) and about \$370 with a built in UPS.

The operating system is Debian Linux 2.4.26 on the ARM board onboard flash memory.

The size and cost of the SVN Box could be reduced further by not using [Technologic Systems' enclosure](#) (\$85 and it has space above the board for 2 additional PC104 boards).

## 2 Version Control Background

There are two main version control systems available. Concurrent Versions System (CVS) and Subversion. Both are excellent and in wide spread use. Subversion was designed to be a replacement for CVS, and thus it eliminates many of CVS's short comings.

Subversion's improvements over CVS include:

1. Tracks changes to directory trees (not just individual files).
2. Allows for files/directories to be added, deleted, renamed, and copies, while maintaining their version history.
3. Atomic commits (updates to the repository are either made completely or not at all)
4. Dramatically better and more efficient handling of binary files.

### 3 Hardware

The SVN Box is based on a TS-7200 by Technologic Systems. The TS-7200 is a 200 MHz ARM single board computer, with onboard flash ram, 10/100 Mbit Ethernet, Compact Flash (CF) card socket, and 2 USB (1.1) ports. The TS-7200 draws approximately 2W at 5 Volts.

The SVN Box can easily have a built in Uninterruptible Power Supply in the form of a NiMH battery pack. A 1200 mAh Hobby battery pack will power the SVN Box for approximately 2 hours. When the battery voltage drops to less than 5.5 volts the SVN box powers down. The SVN Box will automatically power up when mainline power is restored.

The following is the breakdown of the parts required for the SVN Box.

TS-7200	\$170
Enclosure	\$85
1 Gig CF Card	\$67
UPS parts	\$50
Total	\$372

### 4 References

- [The TS-7200 ARM based computer](#)
- [The Subversion Book](#)
- [Subversion Home](#)
- [The Apple Mac Mini](#)

### 5 Alternate Configurations

In addition to the proposed ARM/Linux based solution there are several other possible hardware/operating system combinations possible.

## 5.1 NetBSD Based SVN Box

This version would use almost the exact same hardware as the Linux version. The operating system would be NetBSD, and the root file system would be on the compact flash card since NetBSD does not support the onboard flash of the TS-7200.

Advantages:

- Better ISA support: NetBSD support of the PC104 ISA but is much better than Linux's. This allows for IDE controller cards to be easily added to the PC104 stack and 2.5 or 3.5 inch hard drives to be used with the SVN Box.
- No GPL: NetBSD is not encumbered by the GNU Public License (GPL).
- More Secure: NetBSD has the potential to be more secure than Linux.

Disadvantages:

- Cost: The PC104 IDE control card and a 2.5 inch 80 Gig hard drive add about \$200 to the cost.
- Power Consumption: The a 2.5 inch hard drive would bring the total power consumption up to about 10 W (at 5 VDC). A 3.5 inch drive would be even more and require 12 VDC.

## 5.2 Apple Mac Mini

An Apple Mac Mini is only slightly larger and more expensive (\$500) than the Linux based SVN Box. It is the about the same price as the NetBSD based SVN Box.

Advantages:

- Faster: The Mac Mini has a much faster process and much more RAM than the TS-7200.
- Firewire and USB 2.0 Support: This allows large amount of additional storage to be connected. So it could also be a general purpose backup node for files not under revision control.
- CDR Drive: The Mac Mini has a CDR drive allowing it to backup files to CD.

Disadvantages:

- Power Consumption: The Mac Mini draws about 85W.
- Extra Software and Hardware When operating as a SVN Box and backup node, much of the hardware and software would not be needed.