



# Tech Info Library

## Apple Software Updates: Issues With Downloaded Files (2/97)

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Security: Everyone

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TOPIC -----

I recently downloaded a system software update from Apple Software Updates. After running the installer, strange things are happening. I think the software I downloaded may be corrupted. How likely is this, and what should I do about it?

DISCUSSION -----

First, make sure you're downloading from an official Apple SW Updates location:

- \* America Online - keyword: applecomputer
- \* CompuServe - GO APLSUP
- \* Internet -
  - Worldwide Web: <http://www.info.apple.com/swupdates>
  - ftp: <ftp://ftp.info.apple.com>

It is extremely unlikely that software updates from the Apple Software Updates are corrupted. A bad download could be detected one of several ways:

### The Download Process

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Most download processes involve a constant checksumming. This is a process in which the essence (a checksum) of small packets of downloaded data are generated on the sending side. Once the packet is received, a receive checksum is generated. The checksum from the sender is then compared to the receiver. If they do not match, the packet is resent.

A large number of bad packets would typically result from noisy phone lines, service provider problems (such as heavy machine loads, such as when many people are calling the same system), or software or machine issues on the caller's

side. Such downloads would either take forever, and would usually be terminated by the user; or would be terminated as the result of some other variable (such as communications loss, or a time-out due to excessive delays).

#### The De-binhexing Process

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Software on the Apple Software Updates is stored in Binhex format on most sites. This is a text representation of binary data. Binhex data can usually be identified by a '.hqx' appended to the file name. When a file is downloaded, it must be converted to a binary format. Binhex has its own checksums: when a download is "bad," an error message is generated.

This process has, in fact, helped recipients detect problems with the original archive as it is stored on the Apple Software Updates site: the original data may be corrupted, for example, but when it is being converted into a usable state, an error occurs. In such a case, if multiple downloads fail, the site should be independently checked, and the Apple Software Updates maintainers notified of a potential archive issue.

#### The Decompression Process

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Most software on Apple Software Updates is compressed, and, in addition, is a self-extracting archive. This practice is used to cut down on both storage space and transmission time. The compression algorithms are rigorously defined and are completely inflexible. Any error in the data stream would tend to render the resulting application unusable.

#### Disk Copy

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Once the final product is extracted, it may have to be converted to a useful format. For example, many files on Apple Software Updates are Disk Images. Disk images are designed for use with Apple's Disk Copy (version 4.2 or higher) utility. In the process of creating a floppy disk, checksum tags on the image file are, again, used, and errors may show up.

For further information on Disk Copy, refer to the Apple Tech Info Library article # 9384: Disk Copy 4.2: How to Install and Use (2/97)

#### The Installer - The Final Product

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Computer software does not suffer faults well. Any corrupted data in an application's code will typically cause the microprocessor to fail when it receives either an illegal or inappropriate instruction or when an instruction refers to memory in an improper manner (this accounts for the majority of type 1, 2, 10, and 11 errors). For the installer to succeed without producing an error message is unlikely.

#### Discussion

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From the above information, one can see that the download process involves several steps, each of which has its own checks and balances. It is highly unlikely that an installer would successfully install, yet quietly install corrupted data. A significant error would happen earlier in the process, and

would alert the user of possible issues with the software.

This is not to say that variables on the customer's side are not relevant. If the final installer is run from an external hard disk on an improperly configured (dirty) SCSI chain, random errors may occur. In addition, if the user did not disable his virus detectors or low-level performance or disk-enhancing software prior to running the installer, unusual things could happen without providing immediate feedback.

The best recommendation is to determine at what stage the failure occurs.

To reiterate, if the difficulty happens at the Binhex or uncompress stage, and the user cannot proceed, communications failures are the most likely cause of failure. If communications can be ruled out, the quality of the online archive is suspect.

If a final operational installer can be produced from the above steps, and trouble occurs, other factors are likely at hand, and normal troubleshooting should be vigorously applied: isolate the computer from any external SCSI devices, check for the presence of NuBus, PCI, or PDS cards, and vigorously scrutinize the pre-existing system software situation.

#### Article Change History:

12 Feb 1997 - Added reference to DiskCopy 4.2 article.

06 Feb 1997 - Updated URLs

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