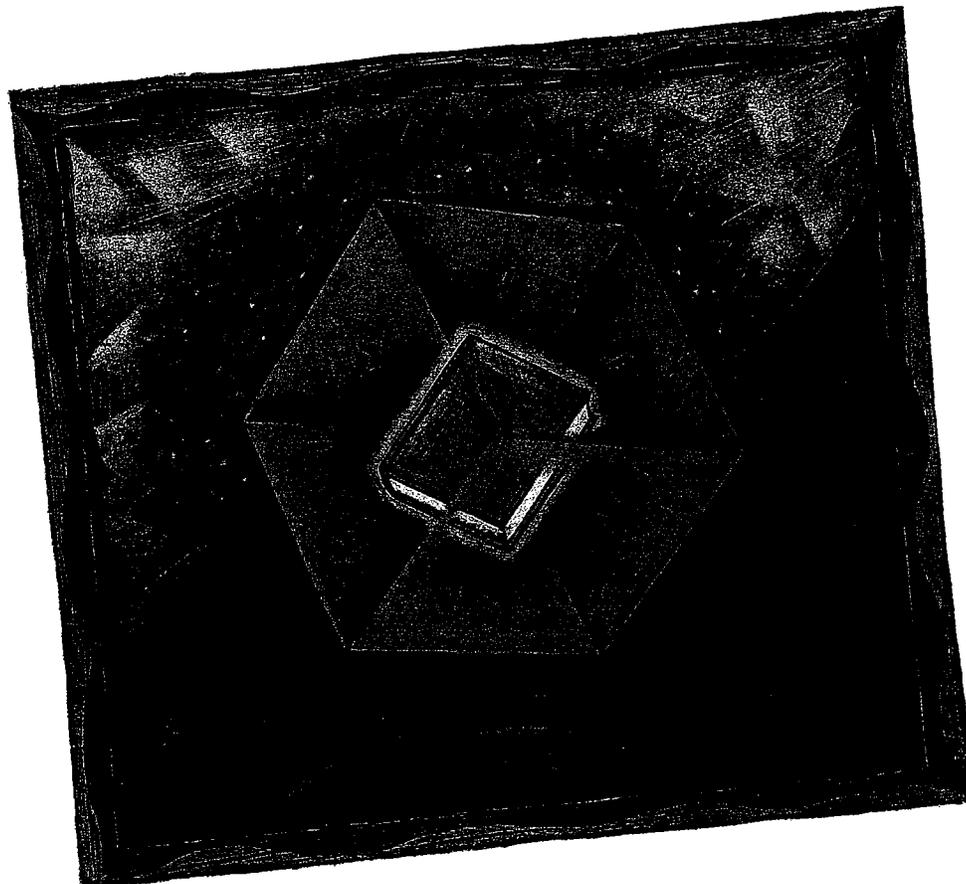


EXHIBIT 12



MacUser



Retrospect[®]

Powerful, reliable, easy-to-use Macintosh backup



Retrospect[®]

USER'S GUIDE

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INTRODUCTION

Introducing Retrospect

Safeguarding and managing the vast quantity of data stored on personal computers is critical to maintaining a productive working environment. Retrospect and Retrospect Remote are the ultimate tools for individual and network backups, respectively.

Retrospect does incremental backups so that it is not copying the same files over and over. New backups copy everything from a source and subsequent backups only copy new files or those which have changed. This saves time and backup media.

Retrospect uses an archival method of backup that ensures backed up files are not deleted or written over until you specify that to happen, so they stay on the disk or tape indefinitely. This is helpful, for example, if you have been working on an important document every day for the past month and you discover you have been making terrible mistakes for the past week. If you have been backing up every day Retrospect lets you retrieve a good version of the file from a week ago (or any point in time it was backed up). This is an important benefit of Retrospect not found in “disk mirroring” backup software.

An important capability of Retrospect is its ability to perform automatic, unattended backups. You can schedule scripts to execute automatically and you do not have to attend to the computer during the backups.

Package Contents

Your Retrospect package includes the following:

- this manual, *Retrospect User's Guide*
- two floppy disks
- registration card

CHAPTER 5 • HOW RETROSPECT WORKS

Retrospect copies files from a source and stores them in a backup set. The source can be a hard disk, file server, compact disc, any Finder-mountable volume, or even a combination of multiple sources.

The destination set can consist of tapes, floppy disks, removable cartridges, opticals, Flopticals, or even a single file on a disk.

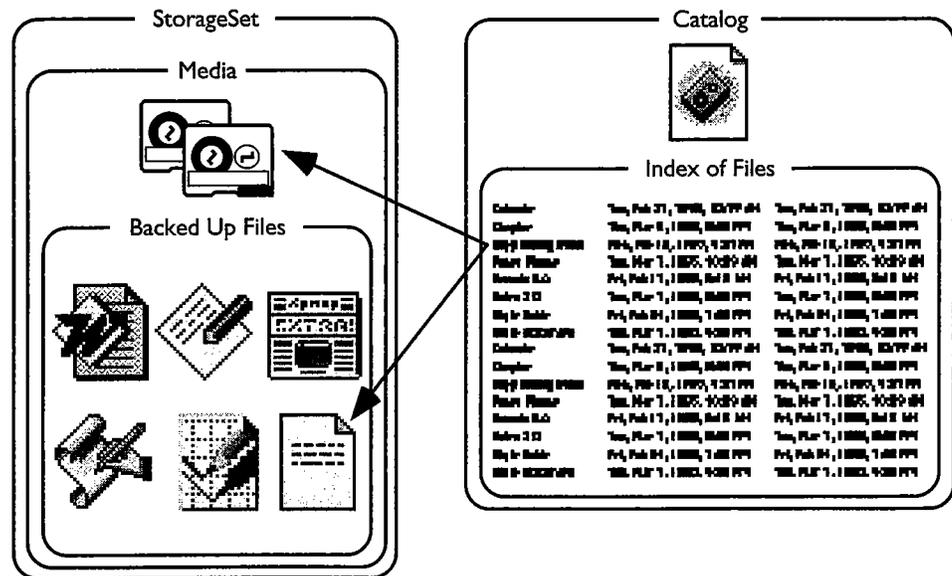
Rather than replacing old files in the backup set, Retrospect adds new or changed files to the set during incremental backups. It uses a separate catalog (usually stored on your hard disk) to keep track of the different generations of modified files in a backup set.

StorageSets and Their Components

The basic building block of Retrospect is the *StorageSet*, which is a set of one or more disks or tapes, or a file.

Individual pieces of media (for example, tapes, disks, or cartridges) are *members* of a *StorageSet*.

The *catalog*, a file saved on your hard disk, is an index or table of contents of the files on the backup media of a *StorageSet*. The catalog lets you view the contents of a *StorageSet* without any of its media on hand. A catalog is required for all operations which copy files to and from a *StorageSet*. If a catalog is lost or damaged, Retrospect can rebuild a catalog from the media. Catalogs typically use 170K of disk space for every one thousand files.



A StorageSet and its catalog. The catalog has pointers which locate the files on the media.

You may back up as many source volumes as you like to a single StorageSet. For example, you could have a single StorageSet as the backup destination for your Macintosh's internal hard disk, your external hard disk, a file server, and a co-worker's hard disk on a Macintosh with an installed Remote control panel.

StorageSet Types

Tapes

A *tapes StorageSet* uses tapes from a SCSI tape device such as a 4mm DAT drive or 8mm Exabyte drive. Files are backed up to the tapes and the catalog is usually saved on the hard disk of the Macintosh doing the backup. Section III, Hardware, and the Retrospect Release Notes provide more detailed information on SCSI and tape drives.

Disks

A *disks StorageSet* uses any ejectable media which appears on the Macintosh Desktop (for example, floppy disks and removable cartridges such as Zip, Jaz, SyQuest, Floptical, or optical disks). Files are backed up to the cartridges and the catalog is usually saved on the hard disk of the Macintosh doing the backup. Section III, Hardware, and the Retrospect Release Notes provide more detailed information on removable media drives.

File

A *file StorageSet* differs from tapes StorageSets and disks StorageSets because it does not use removable media. Rather, it combines the catalog and backed-up files into a single file stored on a volume. (This volume can be any Macintosh volume that mounts on the Desktop, such as a hard disk, file server or shared disk, floppy disk, or removable cartridge.) Unlike the other types of StorageSets, which require media dedicated only to backups, you can store a file StorageSet right alongside other files on a volume used for other purposes.

A file StorageSet can be no larger than the volume on which it is stored. You can decrease the amount of space used by a file StorageSet by using Retrospect's software compression option.

Backup Actions

The main purpose of performing a backup is to copy files into a StorageSet. You can instruct Retrospect to perform three different types of backup actions. Each backup action has its own special way of controlling which files are backed up and the StorageSet media on which they are stored.

Retrospect's default backup action does incremental backups for efficient backups without any extra effort on your part.

Normal

A *normal* backup, as its name suggests, is the action to use in most situations. It is a typical incremental backup, which saves media space by avoiding redundant files in a StorageSet. A normal backup copies only files which are new or newly-modified.

During a normal backup, Retrospect compares the list of files selected to be backed up against the list of files in the StorageSet's catalog, then copies only those files which are not already present on the media. When a normal backup is done to a new StorageSet, there are no files in the StorageSet, so everything selected from the source is backed up.

Normal Backup Example

A backup administrator creates a new StorageSet and does a normal backup to it with a new or erased medium in the backup device. Since no files exist in the new, empty StorageSet, Retrospect copies all the selected files to it.

You learned how to set up and execute Retrospect's immediate backup, restore, and duplicate operations in Section IV of this manual. This section shows you how to automate the process by using scripts.

Retrospect scripts are unlike programming scripts you may be familiar with. A Retrospect script contains predetermined information for the various elements of an operation, such as the source, destination, and files chosen. This is the same information used in an immediate operation, but you can save it in a script for repeated use and unattended, automatic operation. When a script is run, or executed, Retrospect performs the operation using the predetermined information. You can run a script at your command or schedule times when Retrospect is to automatically execute a script. You should create a script for any procedure you perform on a regular basis.

Since Retrospect allows you to schedule your scripts to run automatically and unattended, you can choose backup times that are most convenient for you and for other users. Scheduling scripted backups ensures data is backed up consistently—all you have to do is make certain the Backup Macintosh is turned on and the proper media is in the backup device. Scripts are an important part of developing a backup strategy. (For more information on developing an effective backup strategy, see Chapter 28 • Backup Strategies, on page 199.)

Another advantage of a scripted backup is that it requires less memory than an immediate backup, allowing you to back up more volumes in a single operation. For a scripted backup, Retrospect scans and backs up the sources one volume at a time, meaning the scripted backup requires only enough memory to store the scanned list of the largest source volume. For an immediate backup, however, Retrospect scans all sources before it begins copying files, meaning that it requires enough memory to store the scanned list of all source volumes.

This section's first chapter, Scripted Backup, covers the basics of creating scripts. All other script types (such as archive, duplicate, and restore) use the same basic ingredients. Be sure to read the Scripted Backup chapter carefully because the other script chapters build upon the foundation of that chapter, just as the other script types are based on backup scripts.

For information on managing and maintaining scripts, see Chapter 27 • Maintaining Scripts, on page 193.

- **Note:** When no items are chosen, as is the case in a new script, Retrospect clicks the Add button for you to take you to the StorageSet selection window.

If No StorageSets are Listed

If no StorageSets are listed, click Add. Retrospect brings up the StorageSet selection window to let you add a StorageSet. If none are known to Retrospect, it automatically clicks the window's Create New button. If you watch closely, you can see Retrospect quickly scan your SCSI bus, looking for suitable backup devices before it displays the StorageSet creation window. Use this window to make a new StorageSet, as described on page 10 and page 50. You can make Retrospect recognize other StorageSets by opening them with the More button.

When StorageSets are Listed

Select one or more StorageSets. You can have multiple destination StorageSets so you can rotate among the sets for more safe and effective backups. When at least one StorageSet is listed in the destinations window, click OK.

Setting the Criteria

Retrospect uses all files as the default criteria for selecting files to be backed up. To change this, click the Selecting button and choose a different Selector. Selectors are explained in detail in Chapter 23 • Using Selectors, which starts on page 151. We suggest you use the default Selector, All Files.

- **Note:** Retrospect's All Files Selector does not necessarily cause all the source files to be copied to the destination. It merely selects the files and, during a later stage of the incremental backup, Retrospect decides whether to copy them based on whether the selected files already exist within the StorageSet. Selected files not in the StorageSet are then copied to the destination.

Unlike an immediate backup, a script has no "preview" information with which you can manually mark and unmark files. This is because the script executes later and the volume contents can change between now and then.

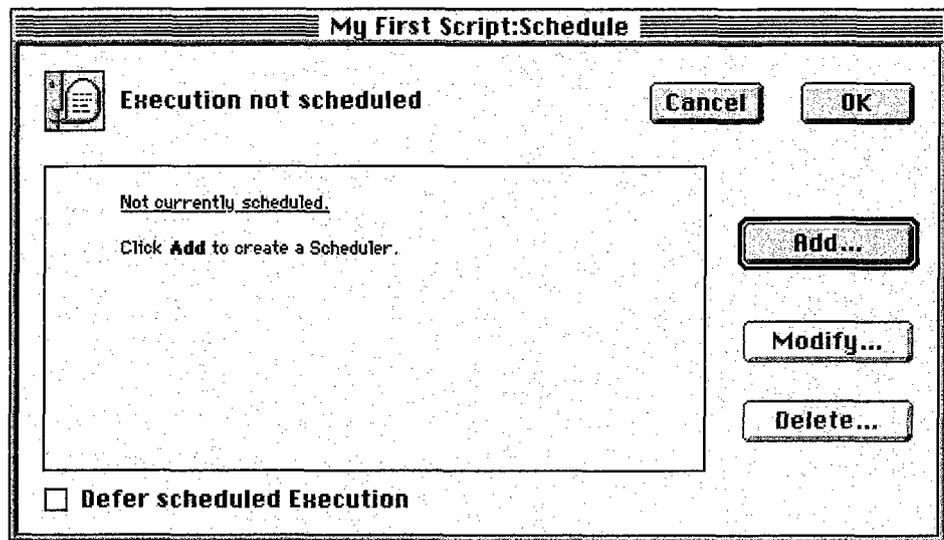
Setting the Options

Click the Options button to display the options window in which you can toggle verification, data compression, and other options which are

explained in detail in Chapter 24 • Execution Options, which starts on page 168. Leave all options at their default settings for now.

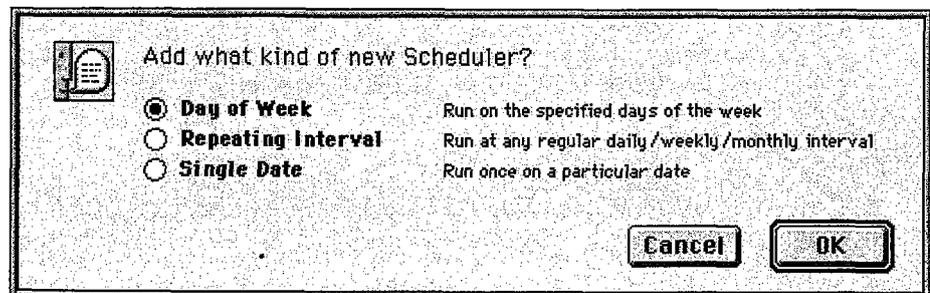
Setting the Schedule

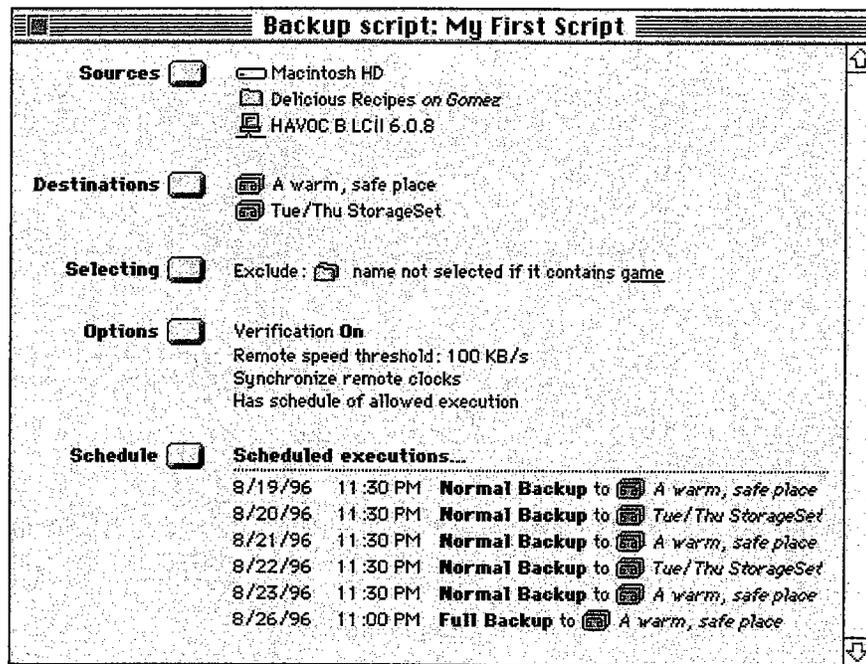
If you want to execute this script only upon your command and in your presence, you do not need to schedule it for unattended execution. (Instead, make a run document or run it from the menu. For details see Chapter 16 • Executing Scripts, which starts on page 99.) To set a time for the script to execute, click the Schedule button to get a window with a list of scheduled operations. (But because this is a new script, nothing is scheduled and the list is empty.)



- **Note:** This chapter explains adding schedules to scripts. For details on creating the schedules themselves, see Chapter 15 • Scheduling Scripts, which starts on page 91.

Click Add to get a dialog asking which kind of Scheduler you want to make.





Choose Save from the Script menu to save it, then close the script window.

Scheduled Executions

Retrospect keeps track of all of your scheduled scripts and automatically executes them at the time you specified.

The Retro.Startup extension (first put in the System Folder by the Retrospect installer and thereafter automatically created when necessary) is responsible for checking the clock built into the Macintosh and comparing it to the next time a script is scheduled to run. If you move or remove Retro.Startup, your scheduled scripts will not automatically execute.

Retrospect is ever-vigilant about scheduled script executions. If a script is scheduled for automatic execution within the look-ahead time (normally twelve hours), Retrospect will not automatically quit (or shut down or restart, depending on a preference setting described on page 248). It instead remains open and waits to execute the script.

See Chapter 25 • Controlling Executions, which starts on page 182, for related information.

CHAPTER 17 • SCRIPTED ARCHIVE

The process of creating and using an archive script is almost identical to that of a backup script. Read Chapter 14 • Scripted Backup, which starts on page 81, to learn how to create a backup or archive script. This chapter only explains the differences between the two script types.

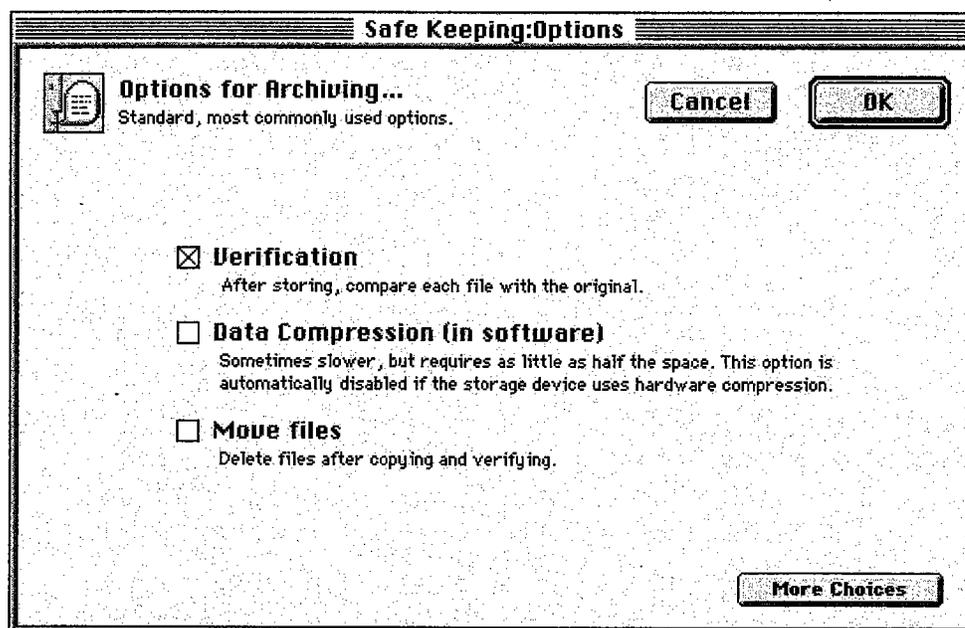
An archive script is just like a backup script, but it has the added option of moving—rather than copying—files from the source to the archive media.

Archiving allows you to remove seldom-used files from a hard disk without permanently getting rid of them.

Be sure to read “Archiving Tips” on page 220 for important information.

Move Files Option

To set this option, click the Options button in the script summary window to get the archive options window.



If the Move files checkbox is not checked, which is the default, the archive script works exactly like a backup script. It is the same thing with a different name, as a bucket is to a pail.

If the Move files checkbox is checked, Retrospect will copy the files to the StorageSet as usual and verify them, then *delete the files* from the original source volume or volumes. (If the Move files checkbox is checked and the script has multiple StorageSet destinations, Retrospect will not delete the files until after they have been copied to all destinations.) If Verification is turned on and the files do not match exactly, the originals will not be deleted. See page 173 for details on archive options.

A highlight count in the upper right corner of the window indicates how many files are highlighted and shows their total size.

Selecting Files and Folders

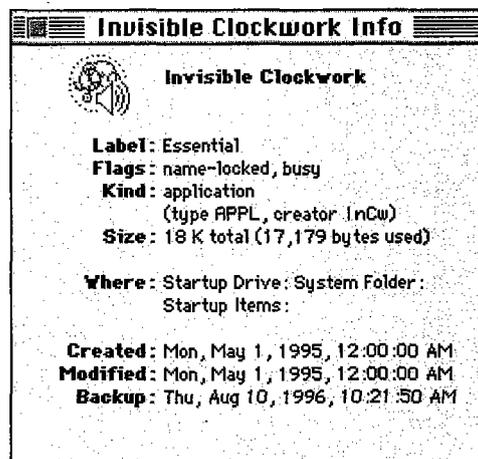
In a Browser window, you select files and folders on which to perform operations. Select files by clicking on entries in the file list. Drag through the list or Shift-click to select a range of files or folders. Command-click to select or deselect non-contiguous items. Select all items by choosing Select All from the Edit menu. Double-clicking a file both selects (highlights) and marks it. Marking is described below, under “Marking Files and Folders.”

Getting Additional Information

Retrospect provides a Get Info command you can use to view information about the selected files and folders. In addition to location, size, and dates of creation and modification, the Retrospect Get Info window provides information about a file’s label, its file type and creator, and compression achieved if you backed it up using Retrospect’s software data compression.

To View Information About Files or Folders

From a Browser, select the files or folders for which you want more information, then choose Get Info from the File menu. An Info window appears for each selected file or folder, displaying additional information about them.



The Info window.

You can build your own Selectors from these conditions as follows:

- **Date** uses creation, modification, or backup dates as conditions.
- **File Kind** uses file creator and type as conditions.
- **Flags** uses file attributes, such as file marked, matched, busy, locked, invisible, alias, name locked, stationery, or custom icon as the conditions.
- **Label (Icon Color)** uses a file or folder's label as a condition. The Label menu in the Finder contains seven labels (and colors, if your monitor displays color or shades of gray) and the "None" option. Each checkbox in this window corresponds to a specific item position in the Label menu and not to the actual color or label name.
- **Name (File or Folder)** uses the name of the file or folder as the condition. The File pop-up menu has three options: "File" matches the name of the file, "Folder" matches the name of the folder and selects the files immediately inside the folder, and "Enclosing Folder" matches the name of the folder and selects all files within the folder, including files nested in other folders.
- **Name (Remote)** uses the name from Retrospect's Network Database as the condition.
- **Name (Sharing)** uses file sharing owner, group or login names as the condition.
- **Name (Volume)** uses the name of the volume as the condition.
- **Selector** uses another selector as the condition.
- **Size (File or Folder)** lets you specify file or folder size as the conditions.
- **Special folders** uses certain system-defined folders, such as the Volume Root, Desktop Folder, and Control Panels Folder, as the conditions to be used with local and Remote volumes.
- **Unix** uses the UNIX file type, permissions, and other special settings for files and folders under A/UX as the condition. This is useful only when using Retrospect under Apple Computer's A/UX operating system. For information on using Retrospect under A/UX, see the Read Me file on Retrospect's Install 1 disk.

Condition Details

Each condition type has its own window in which you enter and specify details for the condition. For example, the Name (File/Folder) condition window is as follows.