Using Bomb Shelter

Bomb Shelter is a Safe & Sound crash protection and recovery utility that prevents critical regions of your system's RAM from accidentally being overwritten by misbehaving application programs. Bomb Shelter also lets you restart a crashed application (an application that has completely failed or stopped responding) in order to recover your data.

Tip   We recommend that you activate Bomb Shelter so it always runs when you run Windows. See Starting Bomb Shelter. By running Bomb Shelter, you ensure that application errors and faults do not cause you to lose data, and more importantly, that such problems do not cause any damage to your system.

If an application tries to overwrite any critical system RAM regions, Bomb Shelter will produce a *fault*, an error condition, and display a dialog box, allowing you to selectively close the faulty application or reenter it so you can save your information before closing.

For a variety of reasons, PC users will, sooner or later, encounter faults and error conditions--usually caused by an errant application. In most circumstances, the application has to be closed, with a corresponding loss of any unsaved data. However on occasions, the problem can be more serious, requiring a complete system reboot.

In even rarer cases, the error can cause critical areas of your PC's files to be overwritten or otherwise corrupted. To repair the damage created by such an error requires lengthy and complex diagnostics and repairs using other Safe & Sound utilities. Bomb Shelter is designed to reduce the severity of application errors, and to almost completely eliminate the most serious errors.

Bomb Shelter can coexist on the same PC with other protection programs. However, you won't need to use another protection program because Bomb Shelter provides the most complete protection. It not only protects your system against high-level errors that other protection programs miss, but it also protects your system against more serious low-level errors.

Since Bomb Shelter operates at a lower system level than other crash protection programs, it will see errors only if any other protection program you use misses the error. So if you have Bomb Shelter loaded with another crash protection program, the other program will intercept some errors. This does not mean that the other program is superior-in fact, quite the reverse. Bomb Shelter catches errors at all levels, so though you can use other crash protection programs, you really don't need to.

These topics explain how to use Bomb Shelter:

- Starting Bomb Shelter
- Recovering from an Application Error
- Recovering a Crashed, Locked Up, or Hung Application
- Selecting Bomb Shelter Properties
- Testing Bomb Shelter
- Deactivating Bomb Shelter
- Closing Bomb Shelter

Related Topics

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Starting Bomb Shelter

When you start Bomb Shelter, it automatically activates so it can begin protecting your system's critical areas from being overwritten by applications and allow you to recover from crashes. Once loaded, Bomb Shelter remains active until you deactivate it.

To start Bomb Shelter:

1. Start Bomb Shelter by doing one of the following:

❑ Click the Start button and choose the Programs > Safe & Sound > Bomb Shelter command in Windows.

❑ Open the Safe & Sound folder and double-click the Bomb Shelter icon from the Windows Explorer or My Computer window.

❑ Double-click the Bomb Shelter tray icon in the Windows task bar.

   The Bomb Shelter dialog box appears.

2. Click OK.

   Bomb Shelter remains active, and automatically places itself in the StartUp folder or group so that it loads the next time you start Windows.

Selecting Bomb Shelter Properties

Bomb Shelter lets you select a variety of properties that determine how the utility behaves and what kind of protection it gives you. You can also select Advanced properties, which provide settings for advanced users and for troubleshooting by Network Associates' Technical Support Engineers.

To select Bomb Shelter properties:

1. Click the Properties button in the <u>Bomb Shelter dialog box</u>.

    The <u>Bomb Shelter Properties dialog box</u> appears.

2. Select the options in the <u>Properties tab</u> and the <u>Statistics tab</u>.

    Click a tab to bring it to the front.

3. Click the Apply button when you finish selecting options for a tab so you can continue selecting options for another tab.

4. If you are an advanced user, or if you are working under the direction of Network Associates' Technical Support Engineers, you can click the Advanced button to specify advanced properties for Bomb Shelter.

Note   It is strongly recommended that you do not make Advanced selections unless you have a very clear understanding of error conditions, faults and Windows.

    The <u>Bomb Shelter Advanced Properties dialog box</u> appears. Select the options you want and click OK.

    The Bomb Shelter Properties dialog box reappears.

5. Click OK when you finish selecting properties.

    The Bomb Shelter dialog box reappears.

Testing Bomb Shelter

The Bomb Shelter dialog box offers a testing option that lets you activate the Crash-Me test program. This test program lets you simulate common application error conditions to check how Bomb Shelter is working and verify that your system is protected.

Note   The Crash-Me test program is provided for advanced users or for use by Network Associates' Technical Support Engineers. Avoid using the Crash-Me test program unless you suspect that Bomb Shelter is not working properly. Bomb Shelter must be *active* when you perform tests. Otherwise, your system will have no protection when you simulate error conditions and you may have to restart your PC.

Network Associates' engineers have made every effort to ensure that Crash-Me crashes gracefully, particularly with any crash protectors other than Bomb Shelter, but prior to running any crash tests, ensure that you have saved all your work and have closed all other programs.

To simulate error conditions:

1. Click the Test button in the Bomb Shelter dialog box.

    Bomb Shelter starts the Crash Me program, which displays the Bomb Shelter Crash Me16/32 dialog box where you can choose the type of error to simulate.

    The 11 fault types simulate different error conditions and faults that can be produced by higher-level applications (such as the General Protection Fault) or by low-level programs (such as the Stack Fault or Null Stack Pointer).

2. Select the test you want to perform and click the Test button to simulate the selected error or fault condition.

    Bomb Shelter creates the desired fault/error conditions and displays the Crash16/32 dialog box.

3. Click the Close button to close the test program, or click the Recover button continue using the test program.

Deactivating Bomb Shelter

You can deactivate Bomb Shelter whenever you like without restarting Windows.

To deactivate Bomb Shelter:

1. Start the Bomb Shelter Wizard either by running Bomb Shelter from the Start > Programs > Safe & Sound menu or by double-clicking the Bomb Shelter tray icon in the Windows taskbar.

2. Click the Deactivate button.

    Bomb Shelter unloads from memory and removes itself from the StartUp folder so it does not load the next time you start Windows.

Closing Bomb Shelter

You can close Bomb Shelter whenever you are finished using the Bomb Shelter wizard.

To close Bomb Shelter:
Click OK in the Bomb Shelter dialog box to exit Bomb Shelter and return to the desktop.

Recovering from an Application Error

Bomb Shelter continuously monitors your system to detect when an application tries to perform an invalid operation or damage any critical part of your system. When such a "Fault" condition occurs, Bomb Shelter suspends the application and displays the Crash16/32 dialog box.

When you see this dialog box, the application has caused an error which usually means it has gone astray. Therefore your data may already be lost or damaged. This dialog box lets you choose what to do with the faulty program.

To attempt to recover your work:

1. Use Windows Explorer to make a backup copy of the open document you were working with in the application.

2. Click the Recover button in the Bomb Shelter dialog box.

3. Attempt to save your work in the application.

4. Exit the application immediately and restart Windows.

Recovering a Crashed, Locked Up or Hung Application

Sometimes application errors cause programs to stop responding to the keyboard or mouse. In Windows, Bomb Shelter can "unlock" programs and allow you to try to recover any previously unsaved information in documents you had open in the application when it stopped responding.

To unlock a locked program:

1. Hold down the **Ctrl** and **Alt** Keys and simultaneously press the **Delete** key (sometimes labeled **Del**).

   Bomb Shelter displays the Close Program dialog box.

2. Select the application that has stopped responding.

   Bomb Shelter tries to recognize the program and pre-select it for you.

3. Click Close to have Bomb Shelter close the program, or click Recover to have bomb shelter try to reactivate the program.

Important   An application that has stopped responding may have other problems as well. Therefore your data may already be lost or damaged. If you need to recover your work, follow the instructions in the following procedure.

To attempt to recover your work:

1. Use Windows Explorer to make a backup copy of the open document you were working with in the application.

2. Click the Recover button in the Bomb Shelter dialog box.

3. Attempt to save your work in the application.

4. Exit the application immediately and restart Windows.

Bomb Shelter Dialog Box

This dialog box contains the following options:

Test
Click the Test button to display the Bomb Shelter Crash Me 16 or <u>Bomb Shelter Crash Me 32 dialog box</u> where you can select simulation errors to test how Bomb Shelter is working.

Deactivate
Click the Deactivate button to deactivate Bomb Shelter, close it, and return to the desktop.

Properties
Click the Properties button to select the Bomb Shelter properties settings you want to use. The <u>Bomb Shelter Properties dialog box</u> appears.

OK
Click the OK button to close Bomb Shelter.

Bomb Shelter Properties Dialog Box

This dialog box contains the following options:

Properties Tab
Click the <u>Properties tab</u> to bring it to the front and select the options it contains.

Statistics Tab
Click the <u>Statistics tab</u> to bring it to the front and select the options it contains.

Advanced >>
Click the Advanced >> button to select advanced Bomb Shelter properties.

OK
Click OK when you are finished working with Bomb Shelter. It accepts any changes you've made, closes and returns you to the desktop.

Cancel
Click Cancel to close the Bomb Shelter Properties dialog box without making any changes to the properties settings since the last time you clicked Apply. The Bomb Shelter dialog box reappears.

Apply
Click Apply to apply any changes you've made in the Properties or Statistics tab.

Properties Tab

This tab contains the following options:

Write Protect System
Activates Bomb Shelter's write protection option that protects various critical parts of your system RAM from being overwritten. If these areas become overwritten or corrupted, your system may lock up or worse.

Automatic Error Recovery
Activates Bomb Shelter's Program Fault dialog box that lets you re-activate crashed programs to try to save the data in them. If you disable this option, Bomb Shelter does not intercept application errors, and you get the regular Windows dialog box for these errors. The Windows dialog box does not have a recover option.

Use Ctrl-Alt-Del to Unfreeze
Activates Bomb Shelter's Close Program dialog box, which lets you re-activate programs that have stopped responding to attempt to save the data in them. If you disable this option, Bomb Shelter will not intercept the **Ctrl-Alt-Delete** key combination, and you will get the regular Windows Close Programs dialog box when you press **Ctrl-Alt-Del**. The Windows dialog box does not have a recover option.

Show Icon in Tray
Tells Bomb Shelter to display the Bomb Shelter icon in the Windows taskbar tray. Double-clicking the tray icon activates the Bomb Shelter Wizard.

Advanced >>
Click the Advanced >> button if you want to select advanced properties options. Most likely, you won't need to select these options. They are provided for advanced users and for troubleshooting by Network Associates' Technical Support Engineers.

Bomb Shelter Advanced Properties Dialog Box

This dialog box contains advanced properties options for the technically advanced or for troubleshooting by Network Associates' Technical Support Engineers.

Note   It is strongly recommended that you do not make Advanced selections unless you have a very clear understanding of error conditions, faults and Windows.

This dialog box contains the following options:

Optimize Global DOS when Loading
By default, this check box is selected. When this option is selected, Bomb Shelter optimizes the global DOS memory whenever it loads.

Lock Kernel segments into memory
If you select this option, Bomb Shelter locks kernel segments into memory so that Windows cannot unload them.

Write protect Kernel segments
If you select this check box, Bomb Shelter write protects kernel segments so that they cannot be changed while in memory.

Write protect 1st Mb
If you select this check box, Bomb Shelter write protects the first megabyte of memory so applications cannot change it.

Write protect all VxD's and System memory
If you select this check box, Bomb Shelter write protects all VxDs (virtual device drivers) and system memory (the memory used by Windows) so applications cannot change them.

Write protect VMM
This check box becomes available if you select the Write Protect All VxD's and System Memory check box. If you select the Write Protect VMM check box, Bomb Shelter write protects the VMM virtual device driver, which is the part of Windows that creates linear memory.

Write protect IDT's
This check box becomes available if you select the Write Protect All VxD's and System Memory check box. If you select the Write Protect IDT's check box, Bomb Shelter write protects the IDTs (Interrupt Descriptor Tables).

Statistics Tab

This tab displays the percentage of protection coverage that Bomb Shelter is offering, the number of write accesses allowed, and the number of faulty applications recovered.

Bomb Shelter Crash Me 16/32 Dialog Box

This dialog box appears after you select the Test radio button and click Next > in the Bomb Shelter dialog box. It contains the following options:

Fault Types
Select the fault type you want to simulate from the Fault Types drop-down list box.

Test
Click the Test button to simulate the selected fault type condition.

Done
Click Done when you are finished running error simulations. Bomb Shelter exits and returns you to the desktop.

Crash16/32 Dialog Box

The Crash16/32 dialog box contains these options:

Close
Click Close to close the application that caused the error.

Debug
Click Debug if you want to use a debugger program to examine or fix the application error. Most likely, you'll only use this option if you are a programmer or very advanced user.

Details >>
Click Details >> if you want to view detail information about the illegal operation that the application performed.

Recover
Click Recover to reactivate the faulty program at a point that should let you save your data. This procedure has some inherent risks and you should follow the steps in the procedure below when trying to Recover a crashed program.

Close Program Dialog Box

Most likely, you will want to click the Recover button, which is available if Bomb Shelter is active, to try to recover any unsaved information in the crashed, locked up, or hung application.

The Close Program dialog box contains these options:

Program List
Select the application in the list that has crashed, locked up or hung.

End Task
Click End Task to close the selected program. You will lose all previously unsaved information in this selected program. However, you can save information in any other programs that are running.

Shut Down
Click Shut Down to exit Windows and shut down your computer. You will lose all previously unsaved information in all the programs that are currently running.

Recover
Click Recover to reactivate the faulty program at a point that should let you save your data. This procedure has some inherent risks and you should follow the steps in the "Recovering a Crashed, Locked Up, or Hung Application" procedure when trying to Recover a crashed program.

Address Space

The sum total of all possible memory addresses available at a given time. This is 4 GB (gigabytes) on a 386 or later PC in protected mode.

Launch Pad

The Launch Pad is a window where you can place application and document icons so you can conveniently access them.

Benchmarks

A benchmark is a standardized task that tests various devices for measurements, such as speed.

BIOS

The BIOS (or Basic Input/Output System) contains buffers for sending information from an application to the hardware device, such as a printer, where the information should go.

Buffers

A buffer is a temporary storage location for information being sent or received.

Bytes

A byte is eight bits of information composed of zeros and ones, one of which may be a parity bit. Most character sets, such as ASCII, use one byte to represent each character (letter, number, or special symbol).

Cache

A cache is part of the computer's memory used to temporarily store recently accessed information. A cache is designed on the premise that recently used information may be needed again soon. Keeping information available in cache reduces the time it takes for an application to obtain the information again.

Cluster

A cluster is a unit of storage allocation usually consisting of four or more 512-byte sectors.

Conventional Memory

Conventional memory is the first 640 K (kilobytes) of RAM (random access memory).

CPU (Central Processing Unit)

The "brain" of your computer. This is main computer chip that controls all activity that takes place on a computer.

Diagnostics

Diagnostics are tests run to detect faults in a computer system. Diagnostics tests are run to detect faults before they become serious problems so the faults can be corrected.

Directories

Directories are locations within a volume on a drive where you can store files or subdirectories. In Windows, directories are equivalent to folders that appear on the desktop in a drive window.

Discardable Memory

Discardable memory is memory used by an application that it has marked as discardable. Windows can reallocate the discardable memory to a different application if it needs to.

DLLs (Dynamic Link Libraries)

A DLL is an executable code module that can be loaded on demand and linked at run time. DLLs can be shared among multiple applications and independently updated, transparent to the applications. DLLs can also be unloaded when they are no longer needed.

DMA (Direct Memory Access)

DMA is a fast method of moving information from a storage device or LAN interface card directly to RAM which speeds processing time. DMA is direct memory access by a peripheral device that by-passes the CPU to save time.

Expanded Memory

DOS running on the Intel 80286, 80386, or 80486 family of computers can only address one megabyte of memory at one time. Expanded memory is the memory located between the base memory (either 512 K or 640 K) and one megabyte. Expanded memory is reserved by DOS for housekeeping tasks, such as managing information that appears on the screen.

Extended Memory

Memory above one megabyte in 80286 and higher PCs. Extended memory can be used for RAM disks, disk caches, or Windows, but it requires the CPU to run in a special mode (protected mode or virtual real mode).

FAT (File Allocation Table)

The FAT is an index to the location where all the information is stored on a floppy disk or hard drive. The FAT is extremely important because the system uses it to store and retrieve files containing information.

GDT (General Description Table)

The GDT is a table that is basic to the operation of protected mode. This table contains data structures (descriptors) that describe various regions of memory and how they may be accessed. Windows uses the GDT for system devices. *See LDT.*

Global Heap

The Global Heap is the general pool of memory available to Windows applications.

GPF (General Protection Fault)

An error condition caused by an application when it attempts to perform an operation not allowed by the operating system. Windows uses GPFs to determine and control the state of the currently executing application. GPFs that are unexpected by Windows cause a system error message to appear.

HMA (High Memory Area)

The HMA is the first 64 K of extended memory. If you use DOS 5.0, you can save memory by loading DOS into the HMA. Do this by adding the DOS=HIGH setting to your CONFIG.SYS file and restarting your PC.

Interrupt

A temporary suspension of a process caused by an event outside that process. More specifically, an interrupt is a signal or call to a specific routine. Interrupts allow peripheral devices, such as printers or modems, to send a call to the CPU requesting attention.

I/O (Input/Output) Device

An I/O device is any piece of computer hardware that can exchange information with the CPU. Examples of I/O devices include network cards, printers, speakers or other sound devices, or devices connected to the serial or parallel ports of your PC such as external modems.

Kernel

The Kernel is the part of a computer operating system that performs basic functions such as switching between tasks.

LDT (Local Descriptor Table)

The LDT is a secondary data structure table that contains additional information about various regions of memory and how they can be accessed. Windows uses the LDT for programs.

Linear Memory

Linear memory is the currently defined address space of the system that Windows uses to allocate memory to Windows applications.

Local Heap

The Local Heap is a region of memory allocated for local use by an application.

Locked Memory

Locked memory is memory used by an application that cannot be relocated or discarded by Windows.

Mapping

Mapping is the process of assigning physical memory (RAM) to a particular linear address range.

Mode Switch

A mode switch is a transition made by the CPU when changing from one mode of operation to another. For example, switching from real or protected mode, or a transition between different levels of protection. *See Ring 0, 1, 2, 3*.

Modules

A module is a device driver loaded by Windows.

Paging

The process of saving information stored in RAM to the swap file on the system hard drive so Windows can make the RAM available at a different linear address.

Parallel Port

The parallel port is a connector on the back of your PC and on some peripheral devices. With the appropriate driver software installed and a parallel cable connected to the parallel ports on your PC and a peripheral device, the two can communicate with each other. Parallel transmissions have no EIA standard, but most equipment follows a quasi-standard called the Centronics Parallel Standard.

PCI (Peripheral Component Interconnect) Bus

The PCI Bus is a local motherboard specification (that provides connector slots on the motherboard for installing peripheral cards). The PCI Bus, designed by Intel, offers a high performance, peripheral component level interface to the CPU bus.

Physical Memory

Physical memory is the RAM (Random Access Memory) installed in your PC. *See Random Access Memory (RAM).*

Protected Mode

A mode of operation of 80286 or later CPUs which allows access to more than 1 MB of memory.

RAM (Random Access Memory)

RAM (Random Access Memory) is also called physical memory. It is installed in your PC on SIMMs (Single Inline Memory Modules) or DIMMs (Dual Inline Memory Modules). RAM is volatile, extremely high-speed storage used by your computer for processing information.

Real Mode

A mode of 80286 or later CPUs, where the CPU operates substantially like an older 8086 CPU and can address directly only 1 MB of memory.

Resources

Resources are objects that Windows and its applications can use, such as the buttons on the screen that you can click.

Ring 0, 1, 2, 3

Different levels of protection in protected mode, where programs having varying degrees of freedom of operation. Ring 0 (zero) is least protected and has direct access to all hardware in the system.

Sector

A sector is a pie-shaped portion of a hard disk. A disk is divided into tracks and sectors. Tracks are complete circuits and are divided into sectors. Under DOS, a sector is 512 bytes.

Serial Port

A serial port is an input/output port (connector) that allows the transmission of information out at one bit at a time, as opposed to parallel which transmits eight bits, or one byte at a time.

Swap File

The swap file is created by Windows on the system hard disk. It uses the swap file to copy information stored in part of the linear address space so it can reallocate the RAM used at that location to another linear address space.

Swapping

Swapping is the process of saving to disk or restoring from disk the contents of RAM so that the RAM can be used elsewhere in linear memory.

System Resources

System resources are a series of data structures kept by Windows. System resources are managed by the Windows User and GDI programs and maintain information about objects that appear on your screen.

32BDA (32-Bit Disk Access)

32BDA is a process in Windows where the device driver that accesses the disk runs entirely as a 32-bit program at Ring 0 (zero).

32BFA (32-Bit File Access)

32BFA is a process in Windows where the DOS file operations are controlled by a program, or set of devices, that operate entirely as 32-bit programs at Ring 0 (zero).

Unlocked Memory

Unlocked memory is physical memory that Windows can copy to the swap file on disk, and whose linear address can be changed whenever Windows chooses.

UMB (Upper Memory Block)

The UMB is the area in memory between 640 K and 1 MB that have RAM mapped into them by memory managers, such as Network Associates' Netroom or MemMaker. *See Expanded memory.*

V86 Mode (Virtual 8086 Mode)

V86 mode is a mode of operation of 80386 or later CPUs where programs, originally designed to run in real mode, can run as sub-programs to a protected mode control program or operating system.

Video Memory

Video memory, called VRAM, is physical memory installed on your PC's video card that is used for displaying information on the screen.

Virtual Memory

Virtual memory is the amount of memory that exists either as physical memory (RAM) or on the hard drive (in the swap file). When a part of memory that is located in the swap file is accessed by an application, Windows reads the information into RAM.

VMs (Virtual Machines)

Virtual machines (also called Virtual DOS machines or VDMs) are created in Windows 95/98 when you open a MS-DOS Prompt window. The VDM is a software emulation of a separate computer, offering all the services that the DOS application expects of a PC.

VxDs (Virtual Device Drivers)

VxDs are used in Windows to communicate with all physical hardware in the system. This prevents any application from having direct access to a piece of hardware. Instead, it communicates only through the VxD for that hardware.

Windows Registry

The Windows 95/98 Registry file contains user, application, and computer-specific configuration information in a central location that was kept in various .INI files in Windows 3.1. The Registry contains settings that determine how your computer runs.