

BrightStor® ARCserve® Backup for Mainframe Linux

Getting Started

r11.5



Computer Associates®

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Chapter 1: Introducing BrightStor ARCserve Backup

In today's dynamic, global business marketplace, organizations rely on computer technology to run their operations. Operational success depends on IT systems that range from applications to databases. Since critical data forms the core of these systems, leaving this data unprotected can have devastating effects on organizations, including missed business opportunities, dissatisfied customers, and forfeited revenue. Consequently, organizations must safeguard information by implementing a storage management solution. BrightStor® ARCserve® Backup—the most comprehensive solution of its kind—is the key to attaining and maintaining a competitive advantage in today's quickly changing environment.

BrightStor ARCserve Backup

BrightStor ARCserve Backup delivers unlimited scalability in a high-performance, data-protection solution that addresses the needs of enterprises with heterogeneous environments. It provides powerful backup and restore performance, easy administration, broad device compatibility, and unsurpassed reliability. It helps you maximize your data storage protection by allowing you to customize the type of protection you need based on your particular storage requirements. In addition, the easy-to-use user interface allows advanced configurations and provides a cost-effective way for users at any level of technical expertise to easily deploy and maintain an extensive number of agents and options.

BrightStor® ARCserve® Backup r11.5 is the next generation in the BrightStor ARCserve Backup family of products. It builds upon the features of both BrightStor ARCserve Backup and BrightStor® Enterprise Backup while providing new functionality to help you maximize your backup and restore performance. BrightStor ARCserve Backup delivers comprehensive data protection for distributed environments.

The Purpose of This Guide

This guide introduces you to BrightStor ARCserve Backup. By the time you have finished reading this guide, you will have an overview of the wide scope of the product and its usability will be familiar to you. It is important to us that you feel comfortable with BrightStor ARCserve Backup before you begin to use it.

High-Level Performance

The architecture and low-level device communication of BrightStor ARCserve Backup provide high performance for all operations. When protecting data, BrightStor ARCserve Backup uses push technology to pre-package data on the client computer, maximizing processing speed when transferring data to the server. It also features intelligent data compression to accelerate data movement, reducing network traffic and increasing drive capacity.

Extensive Platform Support

Many organizations today are deploying Linux-based servers to quickly and inexpensively boost or build computing environments to support their business strategies. BrightStor ARCserve Backup delivers industry-proven protection for many Linux distributions. For a complete list of supported distributions, visit support on our web site, ca.com.

BrightStor ARCserve Backup also supports common Linux GUI interfaces. Linux users can take advantage of the Java-based graphical user interface (GUI) for local or remote web-based management.

BrightStor ARCserve Backup offers transparency for file systems supported on the Linux operating system. You can execute backups locally or remotely using SCSI and TCP/IP.

BrightStor ARCserve Backup offers a wide range of management solutions for Mainframe Linux platforms. These solutions include network and system management, business intelligence, data management, application development, security, and storage management products. These solutions run natively on SuSE and Red Hat distributions or on Linux running as a guest operating system under VM.

Backup Options for Mainframe Linux Environments

BrightStor ARCserve Backup provides many options for backing up your Linux environments. You can use BrightStor ARCserve Backup on Mainframe Linux to do the following:

- Back up individual Linux images and data to tapes controlled by BrightStor ARCserve Backup. BrightStor ARCserve Backup uses VM:Tape to communicate and manage the tapes. This option provides maximum flexibility in terms of what you want to back up and restore.

- Back up Linux images to distributed tape drives or to communicate with mainframe tape managers like BrightStor® CA-1® Tape Management, BrightStor CA-Dynam®/TLMS Tape Management, or BrightStor® VM:Tape®. You can also use our software-based virtual tape facility, BrightStor® CA-Vtape™ Virtual Tape System, to quickly create a backup image on free disk space as a temporary measure or as a snapshot that you can write to tape.

Simple to Deploy

BrightStor ARCserve Backup is easy to install, configure, and use. With its extensive set of options, it provides you with the flexibility to deploy solutions that best suit your requirements.

Using a wide range of client agents, BrightStor ARCserve Backup protects file systems on virtually every platform. BrightStor ARCserve Backup offers optional client agents for the following:

- Windows 95/98, Windows ME, Windows NT, Windows 2000, Windows XP, Windows 2003, Windows XP 64-Bit Edition
- All major UNIX derivatives, including Sun Solaris, HP-UX, AIX, and Tru64.
- NetWare
- Major Linux distributions such as Red Hat, RedFlag, SuSE, Turbo Linux, Miracle, and Mainframe Linux
- AS/400

Unlimited Scalability

BrightStor ARCserve Backup delivers unlimited scalability in a high performance data protection solution. It addresses the needs of large enterprises with heterogeneous environments through the following features:

- **Large Size Library Support**—BrightStor ARCserve Backup supports large tape libraries, from a single drive changer to libraries with multiple drives and slots. With the advanced filtering features in the BrightStor ARCserve Backup Device Manager, you can manage all drives and slots centrally from a single console without requiring you to partition and manage them in separate groups.
- **Low CPU Utilization**—BrightStor ARCserve Backup is engineered to consume minimum CPU. This allows backup and recovery servers to take full advantage of the high-end storage devices, large tape libraries, high-speed storage networks, and high performance I/O channels of powerful servers.

Data Integrity and Security

BrightStor ARCserve Backup delivers all the components necessary for a complete data protection solution, including:

- **Access Control List (ACL) Support**—ACLs enhance agent security by allowing you to specify which servers running BrightStor ARCserve Backup are allowed to communicate with the agents, ensuring that agent access is secure at both the server and client ends.
- **Encryption**—You can encrypt all your backup jobs with a password using the strongest encryption algorithms to provide enhanced secure backups of file system agents.

Easy to Use and Manage

BrightStor ARCserve Backup offers performance capabilities that can significantly reduce backup windows, while its easy-to-use GUI allows you to monitor and administer consistent backup policies centrally. These performance capabilities include the following:

- **Web-Based Access**—BrightStor ARCserve Backup servers are accessed using a web browser. From the BrightStor ARCserve Backup Manager interface, you can back up and restore data, and perform other management tasks.
- **Backup Domains**—Domains are logical collections or groups of BrightStor ARCserve Backup servers. Domains help you manage servers and users easily, allowing you to give a specific user single sign-on to multiple servers with the same access level and privileges for each server.

In addition, domains are structured to synchronize information between designated primary and secondary servers, providing fault tolerance in the event of a primary server failure.

- **Calendar-based Backups**—Using BrightStor ARCserve Backup, you can configure custom, repeating backup jobs based on policies for your environment. To make scheduling easier, BrightStor ARCserve Backup uses automatic rotation schemes that can be either a simple rotation or a Grandfather-Father-Son (GFS) rotation. In addition, large backup jobs automatically span multiple media until the job is complete.
- **Media Policy Management**—You can create and maintain media pools for the logical grouping of media. This lets you create and set policies for the maintenance and recycling of your media. To improve performance for merge jobs and database backup jobs, BrightStor ARCserve Backup creates a media index (catalog) file on your media.

- **Command Line Interface**— In addition to a powerful, easy-to-use, flexible GUI, BrightStor ARCserve Backup provides direct control over all operations performed by a BrightStor ARCserve Backup server from the command prompt.

Using the enhanced command line utilities gives you an alternative method of accessing almost all the operations available from the GUI. In addition, you can access reports from the command line. These reports can be configured to produce output in comma-separated value (CSV) format, allowing you to export this information to Microsoft Excel spreadsheets.

- **Pre-Execution and Post-Execution Commands Based on Job Status**—BrightStor ARCserve Backup provides conditional pre-execution and post-execution commands based on previous results or exit codes. These commands are supported not only before and after job execution, but also before and after execution on computers in the job. You can choose to run, or not to run, a command if a job fails or is completed. For example, you can run a detailed report on a job if it fails.
- **Generic Jobs**—The Generic Job Manager allows you schedule and submit jobs to perform device operations, database administration, and other housekeeping tasks. With the Generic Job Manager, jobs can be scheduled and repeated, allowing you to automate manual tasks that affect your operations and resources.
- **Multiple Network Interface Card Support**—BrightStor ARCserve Backup offers network interface card (NIC) support. If your BrightStor ARCserve Backup server has more than one network connection, you can configure BrightStor ARCserve Backup to use a specific card for backup and restore operations so it does not interfere with any other cards attached to the system.

You can also configure BrightStor ARCserve Backup to use either a set of NIC cards or one card from a configured set of NIC cards when connecting to an agent.

- Remote File System Device Support—BrightStor ARCserve Backup extends file system device support to include remote devices. You can create file system devices accessible through a network share.

Comprehensive Reports and Logs

The reports and logs available from BrightStor ARCserve Backup help you manage and monitor performance. Using BrightStor ARCserve Backup, you can generate meaningful reports. In addition, you can schedule report generation or initiate reports manually.

You can generate a comprehensive set of reports from the Report Manager. In addition, BrightStor ARCserve Backup provides a variety of manageable logs that provide you with the capability to manage logs and monitor performance without affecting system performance. These management tasks include:

- Pruning the Activity log to remove entries based on date and time, allowing you to manage Activity log entries more easily and reduce the size of the Activity log.
- Configuring the server to place catalog files in the server's home directory rather than merging them into the database, preventing the BrightStor ARCserve Backup database from growing too large and affecting performance.

Flexible and Secure Protection

As businesses grow, so do their storage requirements. Data protection environments can become extremely complex. As a result, businesses demand exceptional flexibility from software tools. To meet the rising demand to manage data growth and round-the-clock availability, many organizations are deploying the latest storage technology. The ideal data protection solution must address the business demands of performance and availability, scale with the environment, and leverage new storage paradigms.

BrightStor ARCserve Backup offers the performance, security, flexibility, and capacity needed to back up today's databases, applications, networks, and file systems across LANs. It performs backup tasks without impacting production systems and imposes minimal CPU overhead, ensuring anytime, anywhere access to critical systems.

Enhanced Automation

BrightStor ARCserve Backup gives you the ability to automate a number of tasks using command line utilities. BrightStor ARCserve Backup command line utilities such as `ca_backup` can wait to receive a return code indicating the success or failure of a job before they execute. In addition, you can access the functionality of the Database Manager from the command line using the `ca_dbmgr` command.

Flexible Media

BrightStor ARCserve Backup delivers several features that increase your ability to use your media with maximum efficiency and flexibility:

- You can assign media to a media pool during formatting.
- The default expiration date for media is three years from the date the media was first formatted.

Shared Media Pool

The Shared Media Pool helps you maximize usage for your rewriteable media. When multiple backup jobs share the same media pool, backup jobs can append to more of the available media rather than overwriting new media.

Mainframe Media Scratch Set Options

BrightStor ARCserve Backup for Mainframe Linux can integrate with BrightStor® CA-1® Tape Management. BrightStor CA-1 is an application that automates z/OS tape media management tasks while providing protection against the inadvertent destruction of tape media files.

For more information about BrightStor CA-1 Tape Management, please visit ca.com.

If you are using BrightStor CA-1 in your BrightStor ARCserve Backup for Mainframe Linux environment, you can direct BrightStor ARCserve Backup to move z/OS tape media from the save set to the scratch set after the retention period of the media expires. After the media is moved from the save set to the scratch set, BrightStor CA-1 records the status of the media as scratched.

For information about how to activate this capability, see [Activate the Scratch Mainframe Media Option](#) in the appendix "Installing BrightStor ARCserve Backup."

Global Scratch Set

The Global Scratch Set lets you share the rewriteable media in the Scratch Set of any media pool with all backup jobs using scratch set media. Any custom, simple rotation, or Grandfather-Father-Son (GFS) rotation backup operation can access the media in the Global Scratch Set, allowing you to use media more efficiently and ensuring that media are available when you need them.

Flexible Tapecopy Methods

BrightStor ARCserve Backup provides several methods for copying data from one tape to another. These methods are:

- Using the Tapecopy tool
- Using the Tapecopy command from the command line
- Using the Media Copy option from the Device Manager

Using the Tapecopy command from the command line lets you perform several different tapecopy operations, including disk-to-tape copy capabilities. You can copy individual sessions, as well as entire tapes, allowing you to take advantage of session-level tape-to-tape, tape-to-disk, and disk-to-tape copying. In addition, you can direct tapecopy operations to overwrite existing tapes or to append data to the destination media. You can also use wildcards when specifying destination group names, so that any available group with media is used during the tapecopy operation.

If you are using Tapecopy to copy z/OS or VM:Tape media, the following limitations apply:

- Do not use the Tapecopy Tool to copy z/OS media to z/OS media or VM:Tape media to VM:Tape media because z/OS media and VM:Tape media drivers and services do not support the coexistence two or more media having the same media name in an environment.
- If you are using the Tapecopy Tool to copy z/OS media or VM:Tape media to media from a different vendor, you must have the destination media loaded in the library drive for the copy operation to be successful.
- Before starting a Tapecopy operation that uses VM:Tape or z/OS media as the source or destination media, you must first load the media into the drive.
- VM:Tape media does not support the process of appending data to media after it was unloaded from a drive. If you unload a VM:Tape media from a drive, BrightStor ARCserve Backup can no longer append data to the media.

Benefits and Features

BrightStor ARCserve Backup integrates the powerful enterprise-level functionality of BrightStor Enterprise Backup for Mainframe Linux with its existing BrightStor ARCserve Backup for Linux features to provide comprehensive, multiplatform protection for heterogeneous environments. UNIX and Linux users can access the scalability, flexibility, system support, and functionality BrightStor ARCserve Backup brings to today's heterogeneous environments.

BrightStor ARCserve Backup provides the following benefits:

- **Centralized Management**—The easy-to-use GUI facilitates simplified administration for cross-platform and remote environments. Advanced management functionality allows you to monitor and administer consistent backup policies throughout the environment. From one centralized console, you can back up and restore any computer and other servers in your network, group preferred BrightStor ARCserve Backup servers, view job status, monitor active jobs, view activity logs, and administer BrightStor ARCserve Backup host database systems.
- **Unmatched Performance**—BrightStor ARCserve Backup is the fastest backup solution in the industry. Its innovative data movement methods have recorded minimal CPU utilization, ensuring the ongoing availability of mission-critical application processing time.
- **Unlimited Scalability**—The BrightStor ARCserve Backup solution grows seamlessly with your environment. Its extensive set of options, file system and application agents, support for large storage systems, and highly-scalable index database, with the capacity to hold billions of transaction records, all contribute to its superior scalability.

BrightStor ARCserve Backup meets the storage management needs of any size environment—large or small. BrightStor ARCserve Backup scales from a single server to multiple servers, and you can manage storage across multiple servers from the same console.

- Unparalleled Flexibility—BrightStor ARCserve Backup is simple to install, configure, and use. In addition to its easy-to-use GUI, BrightStor ARCserve Backup provides a comprehensive command line interface. These features, the large set of available options, and the ability to field-enable media devices on site during deployment, give you the flexibility to customize a solution that best suits your storage needs.
- Minimized System Downtime—Whether you need to restore a disk, a directory, a specific version of a single file, a complete file system, or a mission-critical application, BrightStor ARCserve Backup restores your data quickly and easily, ensuring the availability of your critical data.
- Non-Disruptive Application Protection—Application availability is crucial to business success. BrightStor ARCserve Backup delivers all the components you need for a complete data-protection solution. These components are critical when backing up databases, as database availability can determine business continuity.
- Reduced Operational Expenses and Improved Productivity—BrightStor ARCserve Backup automates every traditional storage management task. Automation lowers operating expenses, reduces media errors, and lets you perform essential data protection routines centrally.
- Proven Backup and Recovery Reliability—The comprehensive data protection functionality of BrightStor ARCserve Backup reliably secures critical data using data verification methods such as tape scan and byte-by-byte checking. These methods provide maximum data integrity and recovery capabilities in the event of a disaster.
- Ultra-wide System Support—BrightStor ARCserve Backup offers support for heterogeneous environments. This support allows access from your operating environment to data housed on multiple servers running on multiple platforms. It also features extensive tape device support.

- **Extensive Solution Flexibility**—BrightStor ARCserve Backup makes it easy for you to support your dynamic business. Available agents and options let you extend support to virtually any computer in your environment. In addition, cross-platform management using a Java-based console provides flexible administration across your entire infrastructure.
- **Leveraging New Technologies**, BrightStor ARCserve Backup offers some of the fastest backup agents in the industry. By exploiting mainframe features such as HiperSockets, FICON channels and 64-bit architecture, BrightStor ARCserve Backup for Mainframe Linux can provide you with superior performance on this important platform.

Distinctive Features

BrightStor ARCserve Backup offers a number of key features to improve performance, increase data availability, simplify administration, and improve data protection.

With the following set of features, BrightStor ARCserve Backup provides centralized management of all storage servers throughout your network.

- **Integrated Client Support**—BrightStor ARCserve Backup includes support on workstations for backing up and restoring attached Linux, Mainframe Linux, Windows, NetWare, and UNIX operating systems.
- **Advantage™ Ingres® Database**—BrightStor ARCserve Backup includes Advantage™ Ingres® as the embedded database on all UNIX and Linux platforms. In addition, the new database administration and maintenance utility, `ca_dbadmin`, helps you manage the Advantage Ingres database without requiring specialized knowledge.

- **Built-in z/OS and z/VM Integration**—BrightStor ARCserve Backup for Mainframe Linux uniquely exploits the sophisticated media management and device support capabilities of z/OS and z/VM. Our patent-pending z/OS media service lets you leverage your investments in z/OS tape technology, including BrightStor CA-1 Tape Management software, virtual tape hardware and software including BrightStor CA-Vtape, and robotic tape libraries. BrightStor ARCserve Backup provides similar integration for z/VM, enabling BrightStor mainframe sites to centrally manage data regardless of the mainframe devices or media management solutions you use.
- **Advanced Scheduling**—BrightStor ARCserve Backup allows you to run jobs immediately or to schedule them to run at specific times without user intervention.
- **Data Verification**—BrightStor ARCserve Backup ensures data integrity with numerous verification methods, including tape scan and byte-by-byte verification.
- **Integrated Tape and Library Support**—BrightStor ARCserve Backup includes autoloader support to extend backup flexibility and capacity by leveraging automated tape libraries with one drive and unlimited slots.

Note: You must use BrightStor VM:Tape or BrightStor CA-1 to manage tapes virtually.

- **Parallel Streaming**—BrightStor ARCserve Backup increases performance by backing up, restoring, or copying data to and from as many as 32 devices simultaneously.
- **UTF (Universal Tape Format) Compatible**—BrightStor ARCserve Backup allows users of existing BrightStor ARCserve Backup solutions for UNIX, Linux, and Windows to easily write or restore information on the same tape.
- **Multiple Server Support**—BrightStor ARCserve Backup extends support to protect data on remote servers in addition to the local UNIX or Linux server. Optional client agents allow you to back up and restore UNIX, Linux, Mainframe Linux, NetWare, and Windows computers.

- **Centralized and Remote Management**—BrightStor ARCserve Backup reduces administrative time and increases productivity by centrally managing all enterprise-wide storage activities from a single console. All administrative functions are easily accessible from remote locations through the Java Browser interface running on UNIX, Linux, Mainframe Linux, or Windows.
- **Centralized Monitoring and Administration**—BrightStor ARCserve Backup allows you to monitor all your data protection tasks. Its domain management architecture helps you configure and manage environment security and administer consistent organization-wide policies from a single console.
- **Unattended Operation**—BrightStor ARCserve Backup features total unattended operation for automated data management. Advanced data management tools include tape rotation, scheduling, device cascading, and media spanning to minimize operator intervention and maximize efficiency.

Advanced Features

BrightStor ARCserve Backup provides the following advanced features:

- **Job Preflight Check**—The Job Preflight Check helps you find and correct problems in jobs on local and remote servers before the jobs run, allowing you to proactively reduce the number of job failures due to problems with security, network connection, or media availability.
- **Automatic Performance Tuning**—BrightStor ARCserve Backup automatically detects a number of system parameters that include the number of CPUs, amount of memory, number of tape drives, and speed of the network interfaces. Based on this data, the product fine tunes itself for optimum performance.

- **Disk Staging Option**—Using the Disk Staging Option you can back up data to a temporary disk storage location, known as a staging area, and then copy data to permanent storage media, or purge the data from the staging area at a later time. When necessary, the Disk Staging Option lets you restore data directly from the staging device.

BrightStor ARCserve Backup lets you define staging properties for your staging device groups, and copy and purge policies for your staging jobs. Additionally, you can perform backup to staging device and restore operations using the Backup Manager, the Restore Manager, or the manager's corresponding command line utilities.

The Disk Staging Option provides you with the capability of streaming up to two streams simultaneously on a staging group. To stream more than two jobs simultaneously, you must license the Disk Staging Option. The licensed version of the Disk Staging Option lets you stream up to 32 simultaneous streams of data.

To help ensure that your enterprise complies with regulatory data-retention requirements, you can perform backup to staging device operations using SnapLock protection. SnapLock protection prevents you from purging and over-writing backup data until the specified retention date elapses.

Note: SnapLock™ is technology from Network Appliance that provides non-erasable, non-rewritable, write once, read many (WORM) data security. SnapLock is available on any network attached storage (NAS) device from Network Appliance that supports ONTAP™ version 7.0 or later.

- **Compression**—BrightStor ARCserve Backup provides intelligent, end-to-end remote and local client to server data compression. Compressing data increases the effectiveness of devices and decreases network traffic. This data compression feature is particularly useful if the tape drive does not support compression or if hardware compression is disabled.

- Database Catalog Files—BrightStor ARCserve Backup creates a database catalog file on your media to improve performance in a variety of ways. The catalog file eliminates the need to update the database during a backup, which speeds up your backup jobs. It allows for quick merge and scans of sessions on tape, quick restores of single files, and fast insertion of database records. The catalog file also serves as an index file on tape, giving you the ability to recover file location detail information from your media.

Note: For information about maintaining the BrightStor ARCserve Backup underlying database, tuning the database to improve its overall performance, and reclaiming free disk space to prevent performance deterioration, see the chapter Managing the Database and Reporting in the Administrator Guide.

- Raw Partition Backup—BrightStor ARCserve Backup administrators can bypass the file system and back up a volume directly by accessing the raw device associated with that volume. Backing up a partition in raw (image) mode bypasses the file system, delivering high performance.

Product Integration

BrightStor ARCserve Backup provides easy integration with other Computer Associates solutions.

Unicenter Network and Systems Management Monitoring

Integration with Unicenter[®] Network and Systems Management (Unicenter NSM) enables BrightStor ARCserve Backup to send messages to Unicenter consoles and WorldView repositories when messages are generated about events occurring during backup and restore operations.

If a critical event occurs, BrightStor ARCserve Backup can send an alert notification to a specified list of email addresses. In addition, this feature allows you to attach a job-specific file to the alert notification email.

eTrust Antivirus Protection

BrightStor ARCserve Backup protects your critical data with eTrust® Antivirus, the award-winning antivirus solution from Computer Associates. The eTrust Antivirus solution provides superior protection against today's most prevalent security threat—viruses.

Plan Your Strategy

Before using BrightStor ARCserve Backup for the first time, it is a good idea to plan your backup requirements. Some of the points to consider are:

- How much data do you want to back up?
 - What is the current disk capacity in your environment?
 - What server or data growth do you anticipate over the next year?
- How do you want to manage the media you are using for backup?
 - Will off-site storage be practical?
 - Do you want to migrate unused data to additional storage media?

BrightStor ARCserve Backup does not allow more than 4000 sessions on a single tape and more than 25 sequences of a series of spanned tapes. For a file system device (FSD), the limitation is 65535 sessions on a single FSD. Keep this in mind when planning your backups, because, if your sessions are small, you can reach 4000 sessions very quickly. If you have a large amount of data to back up, you can quickly exceed 25 sequences, depending upon how much data each tape can hold.

BrightStor ARCserve Backup assigns only one drive per group for tape drives that reside inside a library. Each group contains a tape drive, a starting slot, and an ending slot. In addition, BrightStor ARCserve Backup allows you to group the slots individually or share them across groups. For example, if you have a two-drive library with 30 slots, you can group the slots individually by creating group CH_GRP0 and assigning the first drive to it with a starting slot of 1 and an ending slot of 15. You can then create the next group, CH_GRP1, and assign the second drive to it with a starting slot of 16 and an ending slot of 30. This affects how many tapes each group can see.

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For more than a quarter century, CA has been developing and supporting software solutions that are currently used by more than 99 percent of the Fortune 500 companies in more than 100 countries. CA is committed to offering leading technologies in flexible partnerships to help you derive full value from your software investments.

At Computer Associates, we are committed to offering simple and meaningful solutions to your complex problems, and to delivering management solutions that offer security, reliability, availability, and performance. We work hard to achieve the highest levels of quality in our solutions to help you meet your changing business needs.

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- Enterprise management
- Security
- Storage
- Portal and business intelligence
- Database management
- Application life cycle management and application development

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We know what it takes to deliver and support valuable solutions 24 hours a day, 7 days a week, 365 days a year while maintaining the highest standards for quality and innovation:

- We are the first global enterprise software company to meet the exacting standards for worldwide ISO 9001:2000 certification.
- We have earned over 150 patents for innovative software solutions.
- We have the highest caliber software developers and consultants in the industry.

We also know you expect us to stand by our commitments. And we do.

For More Information

After reading this *Getting Started*, you can refer to the numerous resources available to you for additional information. Your product CD contains instructional documents that showcase your software and provide detailed explanations about the product's comprehensive, feature-rich components.

For online technical assistance and a complete list of locations, primary service hours, and telephone numbers, contact Customer Support at [http:// ca.com/support](http://ca.com/support).

Man Pages

Mainframe Linux users can access the BrightStor ARCserve Backup Man Pages from the command line. These files provide information on the BrightStor ARCserve Backup command line utilities, including descriptions, usage, and associated options. To access the man pages, enter the following command:

```
man cmdlist
```


Chapter 2: BrightStor ARCserve Backup Basics

BrightStor ARCserve Backup sets the industry standard for unrivalled data storage management capabilities with its powerful storage technology. This technology is provided for an entire spectrum of users and covers most system platforms.

This chapter describes the requirements you must meet to install and use the product, the concepts that form the BrightStor ARCserve Backup system, and the key components and how they interact with each other and the surrounding environment.

Pre-installation Considerations

BrightStor ARCserve Backup offers an integrated installation script that simplifies installation. However, you must satisfy the following prerequisites before you install the software:

- Ensure that you are running a web service on the server.
- Connect your storage devices to the computer that you designate as your BrightStor ARCserve Backup server, or create file system devices on your computer to be used as backup media.

In addition, you must perform the following:

- Install and run either the BrightStor® ARCserve® Backup Client Agent for UNIX or the BrightStor® ARCserve® Backup Client Agent for Linux to perform any BrightStor ARCserve Backup operation on a target system.
- Ensure that you are running, at a minimum, Mozilla 1.4 or Internet Explorer 6.0.
- Install Java Runtime Environment (JRE), version 1.4.0 or higher, on the computer that is running the Java GUI.

After you review and meet the installation prerequisites, see the appendix "Installing and Configuring BrightStor ARCserve Backup" for information on installing, upgrading, licensing, and configuring BrightStor ARCserve Backup. For more information about silent upgrading, see the appendix "Alternate Installation Information."

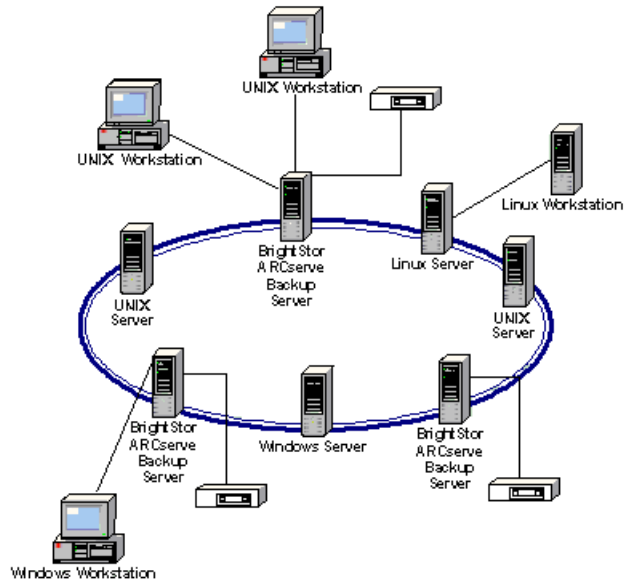
BrightStor ARCserve Backup Components

BrightStor ARCserve Backup has a flexible design that lets you manage and protect your environment. It is composed of powerful components that seamlessly work to accomplish critical administrative tasks.

The two primary components are the BrightStor ARCserve Backup Manager interface and the BrightStor ARCserve Backup Server.

These components work together to back up, copy, and restore data, manage your databases and devices, and produce reports.

The following diagram illustrates an architectural view of BrightStor ARCserve Backup:



The BrightStor ARCserve Backup Manager allows you to control all the BrightStor ARCserve Backup operations from a single computer. Use it to submit your backup and restore jobs, manage your database and devices, search reports, and access all other functions.

The BrightStor ARCserve Backup Manager includes Java classes, icons, images, the httpd daemon, and the Communicator program that functions as an information bridge between the browser and back-end services.

The BrightStor ARCserve Backup Manager interface consists of a set of specialized managers and tools that perform all the BrightStor ARCserve Backup functions. The following section describes each specialized manager and tool.

BrightStor ARCserve Backup Managers

Managers are used to access and control BrightStor ARCserve Backup core functions. To open a manager, select it from the BrightStor ARCserve Backup Manager interface. BrightStor ARCserve Backup provides the following managers:

- **Backup Manager**—This essential manager performs several core functions. These functions include scheduling and submitting backup jobs on any computer in the BrightStor ARCserve Backup domain. It also schedules jobs, sets rotation schemes, and sets passwords for security.
- **Restore Manager**—This manager performs a complete or partial restore of your crucial data and lets you schedule restore jobs from data that has previously been backed up by BrightStor ARCserve Backup.
- **Device Manager**—This manager displays information about storage devices and media, and lets you format and erase media. You can also manage media rotations using this manager by assigning unique serial numbers.
- **Job Status Manager**—This manager makes your job easier by allowing you to monitor active jobs and reschedule or submit jobs having a Ready or Hold status. Log information is provided for each completed job. The Job Status Manager also allows you to group multiple servers so that you can monitor their status.
- **Database Manager**—This manager allows you to view and maintain information such as the jobs processed by BrightStor ARCserve Backup, the media used, applications data that was backed up, session information, disk usage, and client information.
- **Report Manager**—Interfacing with the BrightStor ARCserve Backup database, this manager supplies the reports that you need about BrightStor ARCserve Backup activity. The Report Manager provides reports on jobs, media errors, sessions, backup devices, and media pools.

- **Merge Manager**—This manager enables you to merge information from your media into the database, where it is appended to your existing database files. The Merge Manager is indispensable when restoring files to a BrightStor ARCserve Backup host that was not used to create the backup.
- **Scan Manager**—This manager allows you to scan media for information on your backup sessions. You can scan a single session or the entire media. You can view results of the media scan in the Report Manager under the Activity log listing or under the User log listing if an additional log file was created.
- **User Profile Manager**—This manager allows the BrightStor ARCserve Backup caroot user to customize user access to BrightStor ARCserve Backup based on the privileges assigned to a specific group.
- **Media Pool Manager**—The Media Pool Management functionality provided by BrightStor ARCserve Backup is not supported under Mainframe Linux. You can, however, use the media pools options available in the z/OS or VM:Tape management systems to manage your media pools.
- **Tapecopy Tool**—This tool allows you to duplicate entire tapes or specified sessions for off-site copying. You can make copies using different kinds of media to help you quickly move data from one media to another. In addition, you can select source and definition tapes, view group information for tapes, erase source media, merge destination media, and export destination media.
- **Generic Jobs**—This manager lets you schedule and submit jobs to perform device operations, database administration, and other housekeeping tasks. You can schedule jobs, to automate manual tasks that affect your operations and resources.

Manager Components

The following components work in the background to perform the workload for the managers.

- **Event Logger (caloggerd)**—Handles message logging and message retrieving. You can send messages to multiple destinations, such as printers or email.
- **Linux http daemons**—BrightStor ARCserve Backup works seamlessly with Linux http daemons, task-specific background processes that are dormant until specifically called. Since most Linux installations include web servers and applications that depend on these daemons, BrightStor ARCserve Backup shares their services without interfering with their operation. This allows all Linux applications to run without interruption, ensuring that scheduled backup jobs are executed and system availability is continuous.
- **Universal Agent**—Launches the client and database agents when they are needed. The Universal Agent is a simple, general-purpose daemon that is part of the agent (client-side) modules.
- **Client Agent**—Transmits data to be backed up from a source file system to the BrightStor ARCserve Backup server. This agent lets you browse the source file systems to select the files or file systems to back up. It also writes the data onto the client file system during a restore operation.

BrightStor ARCserve Backup Server Components

BrightStor ARCserve Backup features a powerful web-based Java interface called the Server Admin. You can use this interface to access all the BrightStor ARCserve Backup services from any remote location and from multiple platforms, including Linux and UNIX computers.

The Server Admin contains the Queue, Media, and Database services. These services process and monitor all backup or restore operations and update information about performance in activity logs and databases for BrightStor ARCserve Backup.

The following services work in the background to perform the workload for the BrightStor ARCserve Backup managers:

- Queue Service—Processes your jobs at their designated date and time. It scans the Job queue for a job that is ready to run, and then sends it to the appropriate handler.
- Media Service—Communicates with and controls your storage devices. It selects the device needed for a BrightStor ARCserve Backup job.
- Database Service—Collects and stores the valuable information contained in the database, enabling you to run centralized reports for all BrightStor ARCserve Backup operations. The database information includes:
 - Files, directories, drives, and computers that BrightStor ARCserve Backup has backed up or copied.
 - Job type, final result, and start and end time of jobs processed by BrightStor ARCserve Backup.
 - Media type used by BrightStor ARCserve Backup, as well as the name, the date the media was first formatted, the expiration date, and the sessions it contains.

BrightStor ARCserve Backup Server Daemons

The server consists of back-end core services (called daemons) that process all jobs and update information about these jobs in the database and activity logs. The server contains the following back-end services:

- **Discovery Service (cadiscovd)**—Collects and maintains information about the availability of the BrightStor ARCserve Backup servers on the network and supplies this information to clients requesting access to resources. In addition, this service maintains the user information obtained from the servers on the network.
- **BrightStor ARCserve Backup for Mainframe Linux Loader (caservd)**—Loads and unloads all BrightStor ARCserve Backup services.
- **Authentication Service (cauthd)**—Provides a centralized point of control for security issues that concern the entire network of available resources. This service verifies and controls the actions performed on resources using a predefined set of privileges (permissions).
- **Job Scheduler (caqd)**—Manages the jobs scheduled through the managers or using the command line.
- **Media Server (camediad)**—Handles the transfer of data to and from media.
- **Database Server (cadbd)**—Tracks the jobs that have been run and the files that have been backed up or restored by BrightStor ARCserve Backup.


Mortal and Immortal Daemons

Daemons are components that run in the background and perform specified operations at predefined times or in response to certain events. These system agents and services are responsible for functions such as back-end communications or changing configuration. BrightStor ARCserve Backup uses both mortal and immortal daemons.

Mortal daemons, such as `cabdbd`, `camediad`, and `caqd`, are regular daemons. Regular or mortal daemons can be stopped and restarted if a change is necessary. When these daemons are stopped, some functions are disabled, but the welfare of the server is maintained.

Immortal daemons, such as `caservd`, `cadiscovd`, `cauthd`, and `cloggerd`, can cause severe problems if the server is stopped because these daemons are the foundation of the mortal daemons. Under normal conditions, you should not unload them; if unloading is necessary, always unload mortal daemons before immortal daemons. You can stop immortal daemons only through commands issued at the command line with a `-force` parameter.

Service Status Icons

 The status bar at the bottom of each manager displays an icon for each of the back-end services—the left icon for the Queue, the middle for the Media, and the right icon for the Database service. The color of the icons indicates one of the following three states:

- Green indicates that the service is running
- Red indicates that the service is not running
- Yellow indicates that the `cacomm` daemon is either not running down or the connection to it is broken

You can use the status bar icons to control these services. Right-click an icon to stop or start all services or to view detailed information about the status of the service you selected.

Log On

After you install and configure BrightStor ARCserve Backup, you are ready to log on and begin using its powerful features. Once you have logged on, you can change the password for the caroot user and add new users using the User Profile Manager or the BrightStor ARCserve Backup command line utility, `ca_auth`. For more information on caroot and managing user profiles, see the *Administrator Guide*.

To log on to BrightStor ARCserve Backup and download the Java user interface, perform the following procedure:

1. Use a web browser to connect to the BrightStor ARCserve Backup server. The URL should include the server name and the port number. For example:

```
http://myserver.ca.com:6060
```

Note: The web server port number is 6060 by default, but you can use a different port number.

2. Click the Log on button in the lower left corner of the page. The BrightStor ARCserve Backup Domain Login dialog opens.
3. In the User Name field, enter caroot. If you created a password for caroot during configuration, enter it in the Password field; otherwise, leave the Password field blank. Click OK.

Note: When you log on to BrightStor ARCserve Backup for the first time, you must log on as caroot. After you have logged on, you can add new users through the User Profile Manager.

4. To change the default domain, select a new domain in the Domain Name field.

Note: BrightStor ARCserve Backup provides powerful domain management capabilities that allow you to configure and manage environment security and administer consistent organization-wide policies from a single console.

5. In the Default BrightStor ARCserve Backup Host dialog, select the host that you want to manage, and click OK.

You are now logged on to the BrightStor ARCserve Backup server and are ready to begin taking advantage of its powerful functionality.

Quick Access to the Main Functions

The BrightStor ARCserve Backup Home Page is the central location from which you can access all the main functions of BrightStor ARCserve Backup.

The Home Page includes a News & Support section. The News & Support section provides access to the following support tools:

- BrightStor ARCserve Backup Home Page—Links you to the CA website that includes product information about BrightStor ARCserve Backup.
- Technical Support—Offers the latest news and information from Technical Support, including white papers, how-to documents, troubleshooting guides, patches, and more.
- eNews—Links you to the Storage E-News Archive page, allowing you to quickly access technical newsletter archives that provide helpful technical information contained in service packs, hints and tips, product updates or upgrades, and more.
- Certified Device List—Links you to an up-to-date listing of all devices currently supported by BrightStor ARCserve Backup.

User Administration

After you log on, you can add new users using the User Profile Manager. For more information about caroot, see the *Administrator Guide*.

To add a new user, follow these steps:

1. From the BrightStor ARCserve Backup Manager interface, click the User Profile Manager icon. The User Profile Manager opens.

Note: The caroot profile automatically appears. To modify the password for caroot, highlight caroot and click the Change Password button.

2. To add a new user, click the Add User button. The Add User dialog opens.
3. Enter a user name and password. Enter the password again, and then click OK. The new user appears in the User Profile Manager.

All of the users that you add are part of the BrightStor ARCserve Backup Administrator Group. Administrators have control over all BrightStor ARCserve Backup functions operating within a particular BrightStor ARCserve Backup domain.

Note: To delete a user profile, highlight the profile name and click the Delete User button.

Chapter 3: Backing Up and Restoring Data

Backing up and restoring your data is essential to the success of your organization. By efficiently and dependably protecting and retrieving files, BrightStor ARCserve Backup helps you ensure that your most valuable asset, your data, is protected.

This chapter introduces you to BrightStor ARCserve Backup essentials. It shows you how to submit backup and restore jobs using the Backup and Restore Managers. In addition, it introduces you to the automatic backup system that allows you to set up a backup scheme that repeatedly performs without further intervention.

Job Packages

When you submit a job, you can easily select the items you want to back up and restore, and the location to which you want to back up and restore, by clicking the boxes next to each item on the Source and Destination tabs.

In addition to making it easy to specify what you want to select, the BrightStor ARCserve Backup interface was designed with the power and flexibility to customize the way your job is packaged simply by the way you select items.

Dynamic Job Packaging

If you click the box next to an item and the box turns completely green, this item is packaged dynamically. Dynamic job packaging means that the content of your selection is determined when the job runs. For example, if you choose to back up an entire server and the volumes listed on that server change between the time you scheduled the job and the time the job runs, the volumes from the time the job actually runs are backed up.

When you dynamically select a parent item, all its associated (or child) items are automatically packaged dynamically as well.

Explicit Job Packaging

If you click the box next to a child item and its parent's box appears half green, the parent item is packaged explicitly. If you explicitly select the entire server, the volumes included in the backup are determined at the time the job is packaged. Explicit job packaging means that, in a parent object, you select only certain child items to include in your job. As a result, the content of what is packaged from the parent item is determined when you schedule the job rather than when the job runs.

When a parent item is explicitly selected, it applies only to its child items (the level that immediately follows). It does not apply to any selection you may make in the child items (for example, if you choose to back up only certain files in your child items).

Note: To customize volume or database options, you must explicitly select a parent item.

Back Up Your Data

Backing up your data, the core function of BrightStor ARCserve Backup, is essential to the success of your organization. Maintaining current backups can provide you with the ability to protect and retrieve your data when you need it.

Back Up Data Using the Backup Manager

This section explains how to perform a regular file system backup to back up of all your source files on a particular computer.

To run a backup job, perform the following steps:

1. In the BrightStor ARCserve Backup Manager interface, click the Backup Manager icon. The Backup Manager appears.

Note: The name of the BrightStor ARCserve Backup host server you are managing appears in the upper left-hand corner. This may differ from the host server on which you are logged in.

2. From the Backup Manager Source tab, expand the object containing the computer you want to back up.

Note: If you are performing a backup during peak hours of network traffic, back up the drives that are not in use.

3. A list of computers appears. Double-click the name of the computer you want to back up.

Note: You must have user access to the server you want to back up.

4. The Login dialog appears. Enter the appropriate user name and password to log in to the computer.

Note: The agent must be running on the selected computer before you can submit any backup jobs.

5. After you log in, either click the green box next to the computer name to select all drives, directories, and files on the computer, or click the + symbol that appears next to the computer name to select particular drives, shares, directories, and files to back up.

Note: BrightStor ARCserve Backup lets you back up multiple servers in one job. If you choose multiple servers, BrightStor ARCserve Backup automatically backs up the servers in alphabetical order. If you want to set the priority in which the servers are backed up, select a server, and click the Node Option tab. On the Node Option tab, click the Priority tab, and modify the Backup Priority field.

6. Do one of the following:

- Click the Destination tab, expand a media group, and select a media for the backup destination.

Important! *If you select a blank media, the name is automatically formatted to contain the current time. If you use a tape that has already been used for a backup job, by default, BrightStor ARCserve Backup appends data to the tape.*

You can enter a name in the Media Name field to have BrightStor ARCserve Backup format the media with this name while running the job. If you leave an asterisk (*) in this field, BrightStor ARCserve Backup formats the media name with the current time on your system.

Note: When backing up data from mainframe systems, the media is loaded after the job is submitted. As such, you cannot make selections at the media level for BrightStor VM:Tape until you submit the job.

- Click the Staging tab. From the Staging tab you can back up data using the Disk Staging Option, configure Staging groups, and specify copy and purge policies for your backup jobs.

For more information about the Disk Staging Option, see the *Administrator Guide* or the online help.

7. (Optional) Click the Options button to select backup options.

For more information about backup options, see the *Administrator Guide* or the online help.

8. Click the Method/Schedule tab and select a backup method and a schedule type. You can choose a Full, Differential, or Incremental backup method, and a Custom, Rotation, or GFS Rotation schedule type.

Note: BrightStor ARCserve Backup lets you create a schedule so that your backup job repeats at regular intervals without requiring user intervention. Check the Activity Log to review the details of the backup. For example, you can have the backup repeat once a month or every 36 hours.

9. (Optional) To exclude or include particular directories and files from the backup job, click the Filter icon to open the Filter dialog. From this dialog, you can apply a global filter for the job that selectively excludes or includes directories and files from the backup.

You can also apply a filter to individual objects in the Source menu by clicking the Filter tab.

10. Click the Media Rules tab under the Method/Schedule tab and enter specific information about how to run this backup. You can select Append Mode in the First Media Options area to append the backup data to the existing tape, and specify five minutes as the Timeout period between tapes.

For more information about all the Media Rules options, see the *Administrator Guide* or the online help.

The selections in the First Media Options area apply to the first time a tape is being used for the current backup job. You can use several tapes for a backup job. If the first tape is full, you will be prompted to insert a second tape. If you are using multiple tapes in a backup operation, you can overwrite the same Media name, by selecting the Span Media option.

11. Click Submit. The Submit dialog appears.
12. Select either Run Now to run the job immediately, or schedule it to run at a specific time.

You can enable the Submit Job on HOLD option if you want the job to be on HOLD when you first submit it.

13. Enter a description of the job to help you track it in the Database Manager, Job Status Manager, and Report Manager.
14. Click OK.

Back Up Automatically

You have already seen the benefits of using BrightStor ARCserve Backup to perform a simple backup. Now you are ready to take advantage of the built-in, automatic backup system that lets you set up a backup scheme that, once established, repeatedly performs without any further intervention needed.

Media Rotation

Typically, the most convenient time for you to schedule backup operations is after business hours, when backup processing does not use valuable network bandwidth. BrightStor ARCserve Backup provides you with the tools you need to automate your backup operations.

BrightStor ARCserve Backup allows you to establish a schedule so that your backup automatically repeats at regular intervals, allowing you to regularly and reliably back up your data at any time. The Backup Manager provides you with scheduling options and rotation schemes to help you establish your automatic backup strategy.

Rotation Schemes

You can configure backup jobs using custom schedules, using the pre-defined rotation schemes provided by BrightStor ARCserve Backup, or specifying your own rotation parameters. You can select a repeat method and choose from among the following three backup methods in your rotation scheme:

- Full Backup—Backs up all your files. This backup method requires more time to process compared to incremental or differential backups. However, because all your data is backed up, this strategy requires only the last backup media to restore your data completely.

- **Incremental Backup**—Backs up only those files that have changed since the last full or incremental backup was performed. Since this strategy backs up only new or newly changed files, incremental backups require less time to process. However, this strategy requires the full media set and every incremental set, including the latest set, to fully restore your data after a disaster.
- **Differential Backup**—Backs up only those files that have changed since the last full backup was performed. Since files that were backed up in the last differential job are backed up again, differential backup jobs require more time to process than incremental backup jobs. However, this strategy requires only two sets of media to restore a differential backup, the full media set, and the differential media set.

Important! *You should include at least one full backup per week in any rotation scheme you use.*

Create a Rotation Schedule

To create a rotation schedule, perform the following procedure:

1. From the BrightStor ARCserve Backup Manager interface, open the Backup Manager:
2. Select the Source tab. On the Source tab, select the files you want to back up.

3. Click the Destination tab to choose the group to which you want to back up your data.

Note: On the Destination tab, you can enable the Multi-Streaming feature to perform multiple backup jobs at once. You can also enable the Any Group option if you want BrightStor ARCserve Backup to use any device it has access to for your multiple backups.

4. Click the Method/Schedule tab, and select the Rotation option to use one of the pre-designed backup schemes. You can choose a five- or seven-day schedule using incremental, differential, or full backups. You can also choose to overwrite the data on the tape or append to the existing data. If you choose overwrite, all existing data on the tape will be lost.
5. Now you can use the calendar to review the backup plan you selected. Click the Calendar View tab to view a calendar view of your rotation scheme.
6. To modify a rotation scheme, click the day you want to change. For example, you might want to change a routine to initiate a full backup on Saturday. Make the necessary modification to your schedule, and click OK.

You can also make or view changes to your backup schedule by clicking the Exceptions tab.

To make additional exceptions to your schedule, click Add to open the Exceptions dialog. Click the Date drop-down menu to select the date you would like to change.

7. When you have finished revising your Backup schedule, click the Submit toolbar button to submit the job.

Important! *You must enter the name of the media pool to be used before the job runs.*

GFS Rotations

The Grandfather-Father-Son (GFS) strategy is a method of maintaining backups on a daily, weekly, and monthly basis. GFS backup schemes are based on a seven-day weekly schedule, beginning any day of your choice. The primary purpose of the GFS scheme is to maintain a minimum standard and consistent interval at which to rotate and retire the media. This scheme always uses the oldest media first.

GFS rotation schemes define media in the following ways:

- Daily backups are the Son media.
- A full backup is performed at least once a week. The last full backup of the week is the Father media.
- The last full backup of the month (monthly backup) is the Grandfather media.

You should perform a full backup at least once a week. On all other days, you can perform full or partial backups or no backup at all. The advantage of setting up a GFS rotation scheme is that after it is configured, you need only make sure the right media is in the drive for each day of the week. From that time on, GFS tells you which media to use and manages the backups for you.

Important! *Monthly backups are saved throughout the year and the media on which they are stored should be taken off-site for safekeeping.*

How to Calculate GFS Rotation Scheme Media

The following scenario demonstrates how to determine the number of media you need for a GFS rotation scheme:

Your company's business hours are from Monday to Friday. You have specified daily incremental backups from Monday through Thursday, with a full backup on Friday. You have decided to retain monthly full backup data for six months before you recycle your media, and have specified that at least six monthly tapes are to be maintained in the Save Set of your media pool. In addition, you have specified that a minimum of four weekly tapes are to be retained in the Save Set.

In the GFS rotation scheme you have selected, the incremental backups are the Son, the weekly full backups are the Father, and the monthly full backups are the Grandfather.

Your rotation scheme requires four daily incremental backups, requiring one tape for each day. Because the data these tapes contain is maintained on the weekly full backup, these tapes are recycled each week. Therefore, your scheme requires four daily (Son) tapes.

The backup performed each Friday, the weekly full backup, requires one tape for each week of the month. These tapes are retained for one month before they are recycled, and you have specified that a minimum of four tapes are to be maintained in the media pool Save Set. Therefore, you require a minimum of five weekly (Father) tapes.

The last full backup performed each month is the monthly backup. You specified that these tapes are to be retained for six months, and that six tapes are to be maintained in the media pool Save Set. The minimum number of monthly tapes required before the media recycles is six. Therefore, you need seven monthly (Grandfather) tapes.

The total media you need for this rotation scheme is 16.

Create GFS Rotation Schemes

To set up a GFS Rotation Scheme, perform the following procedure:

1. From the Backup Manager, select a source and destination, and click the Schedule tab.
2. Select the GFS checkbox from the Schedule Type. Choose one of the backup schemes.
3. If you want to add the data from one incremental or differential backup session to the same media as the previous backup session, select Append as the Backup Mode.
4. Select the Media Rules tab. In the Media Pool Name Prefix field, enter the prefix for all your media names. BrightStor ARCserve Backup automatically creates and names your backup media using the name you designate.
5. Click the Submit toolbar button to submit the job. The backup job now runs precisely as you specified, and your media is recycled as you determined.

Restore Data

The previous sections introduced you to using BrightStor ARCserve Backup to back up your data manually or automatically. Restoring your files is the second part of the operation. Before you restore your files, verify the status of your backup job to make sure it is complete. After you have verified this, you are ready to restore your data.

Restore Data Using the Restore Manager

To use the Restore Manager, perform the following steps:

1. From the BrightStor ARCserve Backup Manager interface, click the Restore icon. The Restore Manager appears.
2. From the drop-down menu in the upper left-hand side of the page, select the type of restore you want to perform.

Select the * wildcard from the Group drop-down list so you can select from any group.

You can perform restore operation using one of the following restore methods: Restore by File System, Restore by Session, or Restore by Backup Media.

Note: For information on each of the types of restore you can perform, see the *Administrator Guide* or the online BrightStor ARCserve Backup Help.

3. Expand the object containing the computer from which you want to restore.
4. Expand a computer name and select the sessions you want to restore.
5. Click the Destination tab and select the node you want to restore the files to. To select a specific folder in which to put the restored files, click the plus sign (+) to expand the node. The right pane provides details about the target folder.
6. Double-click the name of the computer to which you want to restore.

Note: You can also specify the Restore files to their original location option.

Important! *You must have user access to the computer to which you want to restore your files.*

7. The Login dialog appears. Enter the appropriate user name and password to log on to the computer.

8. After you log in, select where you want to restore to.

If your restore job requires a user name and password, enter it now on the Security tab.

Note: The right pane describes the details of the target folder.

9. Click the Submit button and choose whether to submit the job immediately or schedule it to run at a specific time. Enable the Submit Job on HOLD option to specify the initial job status as HOLD, enter a job description to help you track it in the database using the reporting tool, and click OK.

You can check the status of your restore session. Open the Job Status Manager to monitor the progress, and view the details of your job.

If you chose to restore your files to a new location, you can compare the files that appear in the new location to the ones on your original directory to further confirm that BrightStor ARCserve Backup performed a perfect backup and restore.

View the Progress of a Job Using the Job Status Monitor

After you submit a backup or restore job, you can monitor the job's progress using the Job Status Monitor.

To view the progress of your job in the Job Status Monitor, perform the following steps:

1. From the BrightStor ARCserve Backup Manager interface, select the Job Status Manager. The Job Status Manager appears.
2. Locate the job you want to monitor in the list and click it.
3. Click the Job Monitor icon or double-click the job status row to display the Job Monitor dialog. From this dialog, you can see the progress of the active job you selected.

For more information about the Job Status Manager, see the chapter "Managing Storage From a Central Location."

Chapter 4: Managing Storage From a Central Location

You have seen how quick and easy it is to back up and restore your computer. You are now ready to extend your expertise and take advantage of the convenience and flexibility of centralized management. This chapter shows you how to back up and manage a remote server and how to manage multiple BrightStor ARCserve Backup servers from a central location.

Manage Remote Servers

Before you can back up a remote computer, you must have BrightStor ARCserve Backup installed and running on your server, and you must install the appropriate client agent on the remote computer.

To add a client computer to the BrightStor ARCserve Backup server, perform the following steps:

1. From the BrightStor ARCserve Backup Manager interface, open the Database Manager.
2. Click the Clients tab in the Database Manager.
3. Click the Add Client icon to add the client.
4. Enter the appropriate client information, and click OK.

The client you added appears in the Database Manager.

Back Up Remote Computers

To back up a remote client, perform the following steps:

1. From the BrightStor ARCserve Backup Manager interface, open the Backup Manager.
2. Expand the object for the appropriate agent.
3. The client computer you added in the Database Manager appears. Double-click the client computer name.

Note: To back up remote computers, you must have user access to the server you want to back up.

4. The Login dialog appears. Enter the user name and password to log in to the computer.
5. Select a backup method. You can back up multiple servers as a single job or you can back up each server as a separate job. If you back up multiple servers as one job, BrightStor ARCserve Backup automatically submits the tasks in the job queue as one job and backs up the servers one after the other.
6. Click the Options toolbar button to select from a number of backup options. Choose options for Media Exporting, Verification, File Retry/Sharing, miscellaneous items, Session Password, Pre/Post specifications, Log specifications, and Database specifications.
7. Click the Submit toolbar button to submit your job.

Note: For more information about selecting the source, destination, and schedule, see "Back Up Your Data" in the chapter Backing Up and Restoring Data.

Manage Multiple Servers

One of the benefits BrightStor ARCserve Backup provides is the ability to monitor and manage multiple BrightStor ARCserve Backup servers from a central location—the Job Status Manager.

To begin taking advantage of centralized management, you must first perform the proper configuration. By default, when you open the Job Status Manager, you can see only your computer. To add a remote BrightStor ARCserve Backup server, you must create a new server group.

To create a new server group, perform the following steps:

1. From the BrightStor ARCserve Backup Manager interface, open the Job Status Manager.
2. Highlight BrightStor ARCserve Backup Servers and click the Add Group button on the lower left of the window.
3. In the Add Group dialog, enter a name for your new group and click OK.
4. When the new group appears in the tree, highlight it and click the Add Group Member button to add a BrightStor ARCserve Backup server to the group.

Note: You must have Administrator or equivalent rights to the remote computer to monitor that computer or to manage its jobs from the Job Status window.

5. Select the name of the computer you want to add and click OK.

After you configure server groups and add group members, you can use the Job Status Manager to:

- Activate or deactivate the job queue.
- View all available BrightStor ARCserve Backup servers, job queues, and activity logs.
- Add, delete, modify, reschedule, or stop an active job.
- Monitor progress of active jobs in the queue.
- View job detail about all jobs that have been executed.

Chapter 5: Managing Devices and Media

BrightStor ARCserve Backup provides a number of ways to help you manage, monitor, and maintain your devices and media. With BrightStor ARCserve Backup, you can optimize the use of your hardware devices and media to further enhance performance.

The Device Manager provides information about storage devices connected to your system, the media in these devices, and the status of these devices. It is the starting point for all media and device monitoring and maintenance operations.

Device Management

Media management consists of software and the processes for using it. A wide range of magnetic tapes are supported as backup media. Because processes such as tracking files to specific storage media are important requirements of your organization's daily production routine, effective media management requires that you can identify the contents and location of all removable media.

Device Manager

The Device Manager lets you see all the devices connected to your computer at a glance. You can obtain information about storage devices, including the tape drives connected to your system, the media in these drives, and the status of a particular storage device, from the Device Manager. Select a media, a storage device, or an adapter card to view information about the media, the storage device, or the adapter card.

Device Manager Functions

To use any of the Device Manager functions, perform the following steps:

1. From the BrightStor ARCserve Backup Manager interface, open the Device Manager.
2. Highlight an adapter, device, media, or changer to display information about it in the right pane.
3. Select an available function from the toolbar.

For tape drives, select one of the following functions:

- Format
- Erase
- Media Copy
- Device Group Configuration

Configure Groups Using the Device Manager

If you have more than one storage device connected to your network computer, BrightStor ARCserve Backup lets you separate the storage devices into groups for easier management. By separating devices into groups, you can have one group perform a backup, for example, while another group processes a restore. This technique is called parallel streaming.

To configure a Device Group, perform the following procedure:

1. In the Device Manager, click the Device Group Configuration toolbar button to open the Device Group Configuration dialog.
2. Click New to create a new group.
3. Enter a name for the new group and click OK. Your new group appears in the Groups field.
4. Highlight both the device and the new group, and click Assign to assign the device to the new group.
5. Click OK.

If a group belongs to a library and your job requires more than one media, BrightStor ARCserve Backup automatically spans multiple media until the job is complete.

Chapter 6: Analyzing Your Storage Environment

The Database Manager and the Report Manager contribute greatly to the strength of BrightStor ARCserve Backup by interpreting operating information for your system and reporting the information directly to you.

- Database Manager—This manager collects all the data that pertains to BrightStor ARCserve Backup. It allows you to view and maintain information such as the jobs processed by BrightStor ARCserve Backup, the media used, applications data backed up, session information, disk usage, and client information.
- Report Manager—This manager interfaces with the BrightStor ARCserve Backup database and supplies logs and reports so you can track the activity, including data on jobs, media errors, sessions, backup devices, and media pools.

Database Manager

The Database Manager makes it easy for you to perform intelligent restores by maintaining records on each file and the media that it was backed up to. It informs the Device Manager where the media is located and when to retire old media. The Database Manager helps you maintain an efficient system by deleting old records and viewing information about jobs BrightStor ARCserve Backup has run.

To view the Database Manager, click the Database Manager icon on the BrightStor ARCserve Backup Manager interface.

When you open the Database Manager, the Summary View helps you determine how much space the database uses on your hard disk.

Click other tabs to view information on Jobs, Media, and Clients. See the *Administrator Guide* for more information on the Database Manager and each of its tabs.

Logs and Reports

The Report Manager produces logs that are saved in the \$BAB_HOME/logs directory. The Report Manager also generates reports according to the information from the BrightStor ARCserve Backup database. To view the Report Manager, click the Report Manager icon on the BrightStor ARCserve Backup Manager interface.

Logs

BrightStor ARCserve Backup provides the following logs:

- Activity Log (BrightStor.log)—Logs all BrightStor ARCserve Backup activity.
- Media Server Log (camediad.log)—Provides an audit trail of all BrightStor ARCserve Backup Media Server activity.
- Database Log (cadbd.log)—Contains information pertaining to all possible database activities, including Backups, Media Pool operations, Media formatting, and GFS operations.
- Queue Scheduler Log (caqd.log)—Provides basic information about all the jobs in the job queue including job ID and pre or post execution commands. You can view this log to get an inventory of the jobs in the job queue. You can also use this log to see what jobs other users have submitted.
- Discovery Log (cadiscovd.log)—Provides all basic domain-related information. It also includes all available servers within a domain.

- **Staging Log (staging.log)**—The Staging service monitors purge and migration jobs on staging devices. This log provides details about purge jobs (job creation, execution) and migration jobs (job creation) on staging devices. Furthermore, the Staging log captures information such as the date and time the job started (or ended), details about the staging device, and details about the final destination media.
- **Caservd Log (caservd.log)**—Contains basic starting and stopping information about all BrightStor ARCserve Backup daemon activity, indicating the tasks each daemon is performing.
- **Authentication Log (cauthd.log)**—Contains comprehensive information about the security operations performed by BrightStor ARCserve Backup. It provides an audit trail of all the BrightStor ARCserve Backup user profiles that are added and deleted.
- **Tape Copy Log (tapecopy.log)**—Records all the tapecopy messages displayed on the console that issued the tapecopy command. The following information about each session is included in the log:
 - Source and Destination Tape Name, ID and sequence number
 - Source and Destination session numbers
 - Amount of data transferred
 - Rate of transfer

In addition, depending on the tapecopy operation involved, the following information may also be available:

- Type of files included in the session (for example, UNIX)
- Type of backup the files belong to (Full, Incremental, Differential)

The Tape Copy Log is a record of all the activities that took place during the execution of the `tapecopy` command. For example, with a typical query-based `tapecopy`, the log entries begin with the list of sessions that were copied by `tapecopy`, followed by the `tapecopy` messages related to individual sessions.

Each line in the Tape Copy Log includes the process ID of the `tapecopy` process. When multiple instances of `tapecopy` are run simultaneously, you can use process ID to identify individual `tapecopy` operations.

Typically, the Tape Copy Log file is used only when you must determine what happened during a `tapecopy` operation.

- **GFS Rotation/Rotation Daily Log**—Helps you manage your GFS backups. It gives you information about your previous backup and helps you prepare for your next backup. All GFS Daily Log files have a `.dly` extension. The file name is the media pool set name. The log resides in the `$BAB_HOME/logs/cas_user_logs` directory.

If you run GFS rotation jobs, check this log each day so that you can physically label your media and retrieve the appropriate media.

The path for the location of your GFS rotation daily log files is as follows:

```
cas_user_logs/BrightStor_ARCserve_Backup_user/Media_Pool_Name
```

The following is an example of where your GFS rotation daily log files are located:

```
cas_user_logs/caroot/rotation_job.dly
```

- **GFS Rotation/Rotation Full Log**—Provides the history of a GFS rotation set, including the dates of each GFS rotation backup and the media used. Each GFS rotation set has its own Full Log. The Full Log does not contain the current Daily Log. All GFS Full Log files have a .ful extension. The file name is the media pool set name. The log resides in the \$BAB_HOME/logs/cas_user_logs directory.

View this log for a general idea of what has been backed up. You may want to do this if you need to restore files from a GFS backup.

The path for the location of your GFS rotation full log files is as follows:

```
cas_user_logs/BrightStor_ARCserve_Backup_user/Media_Pool_Name
```

The following is an example of where your GFS rotation full log files are located:

```
cas_user_logs/caroot/rotation_job.ful
```

- **User Log**—Contains a listing of any messages that may arise during any jobs (backup, restore, and so on) submitted by a particular user. This log is user-specified and resides in the \$BAB_HOME/logs/cas_user_logs directory. You can specify any name.

The path for the location of your user log files is as follows:

```
cas_user_logs/BrightStor_ARCserve_Backup_user/log_name
```

The following is an example of where your user log files are located:

```
cas_user_logs/caroot/scanning_tapeA
```

- **cprocess Log**—Contains more detailed information for each job than that of activity log.

Path:

```
$BAB_HOME/logs/cprocessLogs/<Mon-yyyy>/<Mon-dd-Weekday>.joblog.<JobID>
```

Example:

```
/opt/CA\BrightStorARCserve/logs/cprocessLogs/  
Apr-2004/Apr-27-Tue.joblog.59
```

- **sessionSummary Log**—Provides detailed session information such as session status, total number of files that are backed up in the session, and more other information.

Path:

```
$BAB_HOME/logs/sessionSummary/<Mon-yyyy>/  
<Mon-dd-Weekday>.joblog.<jobID>
```

Reports

BrightStor ARCserve Backup provides the following reports:

- **Job Records Report**—Provides a brief list of all jobs run by BrightStor ARCserve Backup. It contains information found in the Database Manager on the Job View window. For each job, this report includes the job number, job submitter, start date, status, job type, and media pool prefix.
- **Media Records Report**—Provides information about your BrightStor ARCserve Backup media. It contains information found in the Database Manager on the Media View window. It allows you to generate reports about all media or any individual media. This report includes the media name, ID, and sequence number, usage time, creation, format, and expiration date, amount of data written to the media, and number of errors.
- **Media Sessions Report**—Provides information about all the backup sessions on media. Each source you choose to back up is saved on media as an individual session. The report contains session information found on the Database Manager in the Job View or Media View. It allows you to generate reports about any individual media or about all media. For each media session, this report includes the session number, status, host source selected, start time, end time, session method, flags, and total files/KB in the session.

- **Media Session Detail Report**—Includes all information found in the Media Session Report, and lists every file backed up in each session. It contains session information found on the Database Manager in the Job View or Media View. You must select each session separately to view the report.
- **GFS Rotation Job Report**—Provides a brief historical record of all GFS backups performed on a target, listing the set the target belongs to and each of the backups that were performed. For each backup performed, the report includes the target name, target path, media name, sequence, session number, status, number of files backed up, and the amount of data backed up.
- **Rotation Job Report**—Provides a brief historical record of all rotation backups performed on a target, listing the set the target belongs to and each of the backups that were performed. For each backup performed, the report includes the target name, target path, media name, sequence, session number, status, number of files backed up, and the amount of data backed up.

Chapter 7: Customizing Your Storage Environment

BrightStor ARCserve Backup provides a comprehensive package of powerful features that enable automated scheduling, comprehensive alert notification, centralized administration, and extensive reporting. BrightStor ARCserve Backup gives you the flexibility to choose the options that will best suit your business. If you need to further customize the BrightStor ARCserve Backup environment, separately purchased options can extend its management, protection, and performance capabilities. This chapter provides a brief summary of these additional options that help you perform operations, support additional platforms, and maximize performance.

For more information about BrightStor ARCserve Backup products, visit ca.com.

Client Agent Support

BrightStor ARCserve Backup extends data protection to heterogeneous client computers through high performance client agent support. Client agents provide advanced functionality that includes compression before backup is initiated and increased security through strong encryption. The ability of client agents to communicate with backup servers provides organizations with the deployment and management flexibility they require.

Client agents extend backup and restore support to a wide variety of networked computers:

- Windows 95/98/ME
- Windows NT (Workstation/Server)
- Windows 2000 (Professional, Server and Advanced Server)
- Windows Server 2003
- Windows XP (Professional and Home Edition)
- Windows XP Professional (64-bit)
- NetWare (4.x, 5.x, and 6.x)
- Linux (Red Hat, SuSE, Turbo Linux, and Caldera distributions)
- Mainframe Linux
- UNIX (HP-UX, HP-Itanium, Sun Solaris SPARC, Sun Solaris Intel, IBM AIX, and Tru64)

Mainframe Storage Functionality

BrightStor ARCserve Backup provides the following mainframe storage solutions:

- BrightStor CA-Vtape Virtual Tape System— This system lets you use existing tape and mainframe hardware and existing applications to implement a virtual tape system. With this system, you can dynamically add cache as needed. It can redirect tape mounts to DASD virtual volumes, which allows for instantaneous mounts and instant recalls from DASD. You can always stack virtual volumes on a physical tape.
- BrightStor VM:Tape performs parallel functions in a VM operating system environment.

- Other CA products include the following:
 - BrightStor CA-1
 - BrightStor CA-Dynam/TLMS
 - BrightStor VM:Backup

Appendix A: Installing and Configuring BrightStor ARCserve Backup

BrightStor ARCserve Backup is easy to install, configure, and use. This appendix provides the installation, licensing, and configuration information that will help you quickly get BrightStor ARCserve Backup running so that you can begin taking advantage of its powerful functionality.

System Requirements

Before you install BrightStor ARCserve Backup, ensure that you satisfy the hardware and software requirements documented in the readme file. Check the Computer Associates web site at ca.com for any updates to the requirements.

Backward Compatibility

The BrightStor ARCserve Backup r11.5 server can back up data using agents from BrightStor ARCserve Backup r11, BrightStor ARCserve Backup r11.1, BrightStor Enterprise Backup Version 10.5, and BrightStor ARCserve Backup Version 9.

In addition, you can restore data from backup tapes that were created using all previous releases or versions of BrightStor ARCserve Backup or BrightStor Enterprise Backup.

Note: When backing up using agents, the version of BrightStor ARCserve Backup you use must be equal to or greater than the version of the agent you want to back up. You cannot use agents from BrightStor ARCserve Backup r11.5 with any previous version of the base product.

Licensing

BrightStor ARCserve Backup requires that you license your product to receive authorized and uninterrupted access to the components, options, and agents. If you do not license BrightStor ARCserve Backup, it will stop working 31 days after you begin using it.

There are different methods for entering license information, depending on how you purchased BrightStor ARCserve Backup. You can easily determine the method you must use by the location of your licensing information. You can find licensing information in one of the following locations:

- On the back of the product CD sleeve
- On a certificate received from the CA License Program
- On an ALP Key Certificate

The method you use to enter your licensing information differs depending on where your licensing information is located. If your licensing information is located on the product CD sleeve or on a certificate from the CA License Program, you must use one method. If your license information is located on an ALP Key Certificate, you must use another method. The following sections include information about each method.

CD Sleeve or Certificate from the CA License Program

If your licensing information is in the form of a 29-character key on the back of the product CD or on a certificate from the CA License Program, simply input the license key when prompted during installation. Each component you are installing (the base product, option, or agent) requires a license key.

For all components, enter the license keys on the machine where you are installing the components. To use BrightStor ARCserve Backup file system agents, you need to enter the licenses for these agents on the backup server that you will use to protect the remote servers. The backup server verifies that the client agents are licensed. To use BrightStor ARCserve Backup database agents, you need to enter the licenses for these agents on the agent machines.

If you installed the product without entering license keys, you can license this product without performing a new installation. To do this, run the CALicense program in the following directory:

```
$CASHCOMP/ca_lic
```

This program allows you to enter the necessary license keys to license components installed on that system.

ALP Key Certificate

If you receive an ALP Key Certificate, your licensing information is an Execution Key found in the certificate that must be placed in the ca.olf file on each of the machines that are running your Computer Associates software. To simplify the process, you can obtain your current ca.olf file by going to ca.com and downloading the license file. Otherwise, you must manually edit your ca.olf files. For more information, see your ALP Key Certificate.

For all components, simply enter the license keys into the ca.olf file on the machine where you are installing the components. To use BrightStor ARCserve Backup file system agents, you need to enter the licenses for these agents into the ca.olf on the BrightStor ARCserve Backup server that you will use to protect remote servers. The BrightStor ARCserve Backup server checks to make sure client agents are licensed. However, to use BrightStor ARCserve Backup database agents, you need to enter the licenses for these agents into the ca.olf file on the agent machines.

Base CD Installation

When you install from the base CD, BrightStor ARCserve Backup provides an integrated installation script for all of the supported platforms of Mainframe Linux. The installation script simplifies the installation process and provides the following benefits:

- Provides an easy-to-use interface with clear descriptions for each step of the installation.
- Lets you choose all of the packages you want to install before the installation begins.
- Lets you specify installation locations for all packages before the installation begins.

- Automatically upgrades or migrates the existing BrightStor ARCserve Backup or BrightStor Enterprise Backup components to BrightStor ARCserve Backup.
- Tests for the availability of disk space in the specified installation locations and notifies you if sufficient disk space is not available.
- Allows you to automatically set up environmental variables.

Note: If you do not set up environmental variables automatically, you must do so manually before you can configure BrightStor ARCserve Backup. For more information, see Set Up Environment Variables in this appendix.

- Creates the bab and uagent groups for you.
- The installation proceeds non-interactively after you provide the required information.
- Creates a log file to log the activity during installation.

Install BrightStor ARCserve Backup

Note: See the readme file to get the latest information about operating system support, system requirements, and installation considerations before beginning the installation.

You can use the installation script to install BrightStor ARCserve Backup and all available packages. To run the installation script, use the following steps:

1. Log in as root.
2. If the BrightStor ARCserve Backup packages are on CD, mount the CD to a remote UNIX or Linux computer and create a mount point to access the CD, as in the following example:

```
#mount remote_server:/remote_mount_point /mnt/cdrom
```

3. To begin the installation, go to the directory where you have mounted the CD, and run the following script from the command prompt:

```
# ./install
```

or

```
path/install
```

where path is the location of the installation script.

Note: You should not install BrightStor ARCserve Backup under an NFS-mounted file system.

The script then guides you through the installation process.

Use Installation Scripts

Installation scripts can vary depending upon the platform on which you are installing BrightStor ARCserve Backup.

The following procedure outlines the steps in a typical installation script:

1. A typical installation script first presents the Computer Associates Licensing Agreement. You must read the terms and conditions regarding the use of the product and agree to these terms to proceed with the installation. If you do not agree, the installation process will stop.
2. You are asked if you want to view the Installation Notes. These notes provide information to help you install or remove BrightStor ARCserve Backup. Press Enter to view the installation notes, or enter n to proceed with the installation process.

3. You are prompted to select the BrightStor ARCserve Backup components that you want to install and to indicate the installation directory in which to install these components. BrightStor ARCserve Backup then verifies your choices and asks you if you want to continue with the installation.

BrightStor ARCserve Backup checks the available space to determine if you have enough space to accommodate the installation.

4. You are prompted to select whether you want the installation to automatically upgrade or migrate the existing BrightStor ARCserve Backup components, if there are any. If you choose No, the installation stops.
5. The installation script asks if you want to enable automatic startup and shutdown of all the BrightStor ARCserve Backup agents you are installing.
6. When you are asked if you want to install the BrightStor ARCserve Backup documentation set, choose Yes. If you choose No, installation of the documentation set is bypassed.

The installation script identifies the installation log file and tracks the progress of the installation. When the installation is complete, the installation script status changes to `INSTALL SUCCESSFUL`.

7. You are prompted to configure the components you installed.
8. You are then asked if you want to view the readme file.

Agent CD Installation

The agent CD provides the capability to install BrightStor ARCserve Backup agents and upgrade or migrate the existing BrightStor ARCserve Backup agents for any platform.

Install the File System Agent

To install the File System Agent, use the following steps:

1. On the server, log in as root.
2. If the BrightStor ARCserve Backup packages are on CD, mount the CD on your local system.
3. To start installation, go to the directory where you have mounted the CD, for example:

```
# cd /mnt/cdrom
```

4. Go to the subdirectory for the platform you want to install the File System Agent, for example:

```
# cd s390
```

5. Run the following command:

```
# ./install
```

or

```
path/install
```

where path is the location of the install script

Note: If you have a previous version of the File System Agent installed, BrightStor ARCserve Backup detects this when you enter this command and automatically upgrades for you.

Upgrade BrightStor ARCserve Backup

The BrightStor ARCserve Backup base CD and agents CD installation scripts include the automatic upgrading and migrating functions. To upgrade or migrate the existing BrightStor ARCserve Backup components, you must run the installation scripts.

Uninstall BrightStor ARCserve Backup

To remove BrightStor ARCserve Backup packages from your system, run the uninstall script. The uninstall script is located in the `$BAB_HOME/bin` directory.

Set Up Environment Variables

You must set up environment variables before you configure BrightStor ARCserve Backup. To set up the environment variables, use one of the following methods:

- During installation, select the option to have the installation script automatically modify and set up the environment variables for you. Environment variables are set up in `/etc/profile.d/bab.sh`.
- Use the `/etc/profile.d/bab.sh` file created after you install or upgrade BrightStor ARCserve Backup.
- Use the following information to manually set variables (applies to Korn Shell or Bourne Shell, only):

```
# export BAB_HOME=/opt/BrightStorARCserve
# export LD_LIBRARY_PATH=$BAB_HOME/lib:$LD_LIBRARY_PATH
# export PATH=$BAB_HOME/bin:$BAB_HOME/sbin:$PATH
# export MANPATH=$BAB_HOME/man:$MANPATH
```

Note: You can use these environment variables if you installed BrightStor ARCserve Backup under the `/opt` directory.

Kernel Parameter Settings

You should use the following kernel parameter values for the computer on which the BrightStor ARCserve Backup server will be configured. You should also use the operating system specific method to perform a backup of your current kernel parameter settings before changing them to the BrightStor ARCserve Backup recommended values.

The following is an excerpt from the csetup script that checks your kernel parameters:

```
shm-max=256000000
```

BrightStor ARCserve Backup for Mainframe Linux automatically sets the kernel parameter to 256000000 when this parameter is under the minimum value. Use `sysctl` to check your current kernel parameter settings and their minimum and maximum values.

Configure BrightStor ARCserve Backup

After you install BrightStor ARCserve Backup, you must configure it. To do this, make sure that you set up the environment variables correctly and run the following command:

```
# csetup
```

When you enter this command, BrightStor ARCserve Backup automatically checks to see if `csetup` was previously run on your system. Depending on the results, either the configuration script or the reconfiguration menu appears. The following sections include more information on each of these.

Note: See the BrightStor ARCserve Backup option guides for information about configuring specific agents or options. For example, for information about configuring the BrightStor ARCserve Backup Disaster Recovery Option, see the *Disaster Recovery Option Guide*.

Configure BrightStor ARCserve Backup Using the Configuration Script

When you run `csetup` for the first time, the configuration script appears. This script lets you configure all BrightStor ARCserve Backup modules during one session.

Note: The `csetup` output may differ depending on your operating system.

For Mainframe Linux operating systems, use the following procedure:

1. The configuration script checks the BrightStor ARCserve Backup kernel parameters.
2. The configuration script prompts you for information about the configuration of BrightStor ARCserve Backup services. This information includes setting the primary discovery service, domain name, secondary discovery name, and `httpd` web service port number.

BrightStor ARCserve Backup provides a discovery service to share data among a group of computers. You can also configure an optional secondary discovery service to use if the primary is unavailable. All computers in the group must be configured to reference the same primary server and secondary server, if appropriate.

3. You must provide a port number. The BrightStor ARCserve Backup server uses this port number to communicate when Java GUI requests are made. The default number is 6060.

If you accept the default port number, you can manage it from the following address:

```
http://IPaddress:6060
```

4. If you have not yet installed the Advantage Ingres database server, you are now given the option. The Advantage Ingres database server can be used with BrightStor ARCserve Backup to provide advanced database management options.
5. The configuration script prompts you to indicate whether you want to add the user `ingres` automatically or manually.

6. If this is the first time you are setting up Advantage Ingres on your computer, you are prompted to specify the full installation path or to press Enter. The following is the default path:

```
/opt/CA/ingresii/ingres
```

7. You are prompted to specify whether you want to use the Basic setup or Advanced setup. Basic setup allows you to specify the transaction log size. Advanced setup can specify II_DATABASE location, II_LOG_FILE location and transaction log size. You should use Advanced setup for production environment.

The following list provides you with general guidelines for setting the transaction log:

Small setup:

- Number of Files: less than 100 K
- Transaction Log Size (default): 400 MB

Medium setup:

- Number of Files: between 100 K and 500 K)
- Transaction Log Size (default): 1 GB

Large setup:

- Number of Files: more than 500 K
- Transaction Log Size (default): 2 GB

The configuration script verifies your settings before installing Advantage Ingres.

8. You are asked you if you want to extend your database to multiple locations. Each location can hold up to nine million records.
9. You are asked if you want to configure Advantage Ingres to shut down automatically when the BrightStor ARCserve Backup database is shut down.

Note: Do not enable this feature if other applications are using the same Advantage Ingres installation.

10. The configuration script asks if any locally attached devices are available on your Mainframe Linux machine. If you enter `y` for Yes, you must input their starting address and ending address.
11. The configuration script asks if any devices are connected by TCP/IP. If you enter `y` for Yes, you need to input the host and port.
12. BrightStor ARCserve Backup inserts the needed mainframe device driver modules into the kernel.
13. You are prompted to indicate if you want to enable backup to disk. the default setting is No.
14. The script verifies your log settings and asks you if you want to enable BrightStor ARCserve Backup to start and shut down automatically when the operating system is started or shut down.

Reconfiguration Menu

If this is not the first time you have run `csetup`, the reconfiguration menu appears. This menu lets you select individual modules to configure rather than running through the entire script as you did the first time you ran `csetup`.

The reconfiguration menu prompts you that the setup of BrightStor ARCserve Backup has been successfully completed. You can select individual modules to set up or you can choose to continue with `csetup`.

The following is a description of each of the reconfiguration menu items:

- **Check Kernel Parameters**—Automatically compares the kernel parameters' values on your system with the recommended values for BrightStor ARCserve Backup. If the values do not match, the recommended values are displayed.
- **Web (Apache Server)**—Use this to configure the port number of the web server.

- BrightStor ARCserve Backup Database—Use this to install, re-initialize, or extend the BrightStor ARCserve Backup database.
- Logger—Use this to specify a log file size limit on all BrightStor ARCserve Backup logs (including the Activity Log), and to enable printing of these log files.
- Automatic Start/Stop—Use this to configure BrightStor ARCserve Backup to start up and shut down automatically when the operating system is started or shut down.
- Authentication—Use this to initialize the authentication database, set the caroot password, and add the current user as caroot equivalence.
- Start up BrightStor Services—Use this to start all BrightStor ARCserve Backup services.
- Stop BrightStor Services—Use this to stop all BrightStor ARCserve Backup services.
- Continue with csetup—Select this to run the entire configuration script as it did the first time you ran csetup.
- Start up BrightStor Services and Exit—Use this to exit the current menu and start all BrightStor ARCserve Backup services.

Mainframe Device Drivers

BrightStor ARCserve Backup for Mainframe Linux includes the following device drivers:

- z/OS Device Driver
- Linux/390 Device Driver

The following sections describe these drivers and how you can install and configure them. Before you begin, decide which driver best suits your site's needs. For more information, see *How to Determine Which Device Driver to Use* in this appendix.

z/OS Device Driver

The z/OS Device Driver runs as a batch job or as a started task on an OS/390 or z/OS system. You do not need to attach tape drives to the Linux/390 environment. BrightStor ARCserve Backup can send requests to read and write data to the z/OS Device Driver using TCP/IP. You can preallocate tape drives through JCL or dynamically allocated or deallocated as needed. You can control the properties of the dynamically-allocated tape drives through definitions in a parameter file described later.

You can install this device driver on an OS/390 or z/OS system. The installation requires the use of an APF (Authorized Program Facility) authorized library. For compatibility with BrightStor CA-1, BrightStor CA-Dynam[®]/TLMS or other TMS (Tape Management System), you must define the driver as an EDM (External Data Manager) to the tape manager.

For more information about how to define an EDM, see your tape manager documentation. For more information about how to install the driver, see *Install the z/OS Device Driver* in this appendix.

The Linux/390 Device Driver

The Linux/390 Device Driver is a standard Linux file system driver that BrightStor ARCserve Backup adds to the Linux kernel when BrightStor ARCserve Backup starts. It handles the requests for the tape devices and opening, closing, reading, and writing of physical tapes.

If BrightStor ARCserve Backup processes tapes natively on Linux, you must install the Linux/390 Device Driver. Note that tape drives do not have to be attached to your Linux system when BrightStor ARCserve Backup starts. BrightStor ARCserve Backup sends all requests to read and write data and position a tape to the Linux/390 Device Driver.

The Linux/390 Device Driver sends requests to the device directly instead of routing the request to another system. If you run Linux as a VM guest machine, a tape drive can be attached or detached by Unicenter VM:Operator[®], BrightStor VM:Tape, or BrightStor CA-Dynam[®]/B for VM management systems. When a device is attached, an IRQ is allocated or re-used. The device-unique IRQ allows multiple tape drives to be attached. This enables multiple backups and restores to run simultaneously.

The Linux/390 Device Driver supports mainframe channel-attached tape drives, including 3480, 3490, 3590, and plug compatible devices from other vendors. csetup installs it automatically as part of the BrightStor ARCserve Backup base product configuration.

How to Determine Which Device Driver to Use

If you are running z/OS on your mainframe system and want to have integration with the tape management products running on z/OS, you should install and configure the z/OS Device Driver. This will enable integration of BrightStor ARCserve Backup media management capabilities with your existing mainframe solutions. If you have robotic tape or CA-Vtape on z/OS and a reasonably high speed network, you can use the z/OS Device Driver.

If you do not have z/OS installed or do not want to have the backup data flow through the z/OS system, you should use the Linux Device Driver. This driver lets you to integrate and process tape usage with z/VM.

Install the z/OS Device Driver

Important! *You do not need to install the z/OS Device Driver if you are using devices that are directly attached to the Linux machine running the Linux/390 driver.*

To install the z/OS Device Driver, use the following steps:

Note: You can locate the casvt390.tar.Z file on the BrightStor ARCserve Backup installation CD.

1. Extract casvt390.tar.Z on a Linux system that has FTP access to the z/OS system on which you want to install the z/OS Device Driver.
2. Locate the casvt390 directory. This directory contains the CASALLOC file you can view using any Linux editor.
3. Use FTP to transfer the JCL contained in the CASALLOC file to the z/OS system on which you want to install the z/OS Device Driver.

You must run CASALLOC on the z/OS system to allocate the datasets you need to install the device driver. The casvt390 directory also contains subdirectories that populate the datasets allocated by the CASALLOC job.

4. FTP and convert the following subdirectories to EBCDIC:
 - jcl
 - parm
 - proclib

Note: The jcl subdirectory contains link edit jobs that create the load modules needed by the z/OS Device Driver.

The Load Library requires APF authorization after all the link edit jobs have been successfully run. For more information about how to define authorized libraries, see the IBM z/OS documentation.

5. FTP the obj subdirectory to the z/OS system. The files in this subdirectory must be transferred as binary.

6. Run the CASDBDEF job to create a VSAM file required by the device driver.
7. Update the PARM file to customize the environment. For more information, see z/OS Device Driver Parameters in this appendix.
8. The z/OS Device Driver provides a built-in interface to your z/OS TMS. You must define it as an EDM (External Data Manager). For more information, see the documentation provided with your TMS.

Note: You can use your z/OS security system to control access to the z/OS Device Driver by permitting or denying access to the ARCCONN resources.

When you complete the installation steps, you can start the device driver. BrightStor ARCserve Backup supplies four startup jobs in the JCL dataset:

- JCLVTS10 and JCLVTS20 invoke the CASOS390 proc that is contained in the PROCLIB file. These jobs statically allocate the following tape drives:
 - JCLVTS10 uses port 3214 from the parameter file and has the unit parameter set to SILO in the JCL stream.
 - JCLVTS20 uses port 3215 from the parameter file and has the unit parameter set to VTAPE in the JCL stream.
- DYNVTS10 and DYNVTS20 invoke the CASOSDYN proc that is contained in the PROCLIB file. These jobs dynamically allocate the following tape drives:
 - DYNVTS10 uses port 3214 from the parameter file and has the unit parameter set to SILO in the JCL stream.
 - DYNVTS20 uses port 3215 from the parameter file and has the unit parameter set to VTAPE in the JCL stream.

Before running these jobs, update and customize them by specifying the appropriate high-level qualifier, unit, and server parameters.

z/OS Device Driver Parameters

The z/OS Device Driver supports the following parameters:

Parameter	Default	Description
HLQ	None	High Level Qualifier used to c datasets
IPTIMEOUT	2 Minutes	Value in minutes for detecting network
PORT	1500	Port that the tape device driv will bind for IP connectivity
TAPEEXIT	ARCTVEXT	Name of the tape managemen exit routine
TCPJOBNAME	None	Name of the TCPIP address s
STATS	0	Level of statistics displayed a end of a session
THREADS	10	Number of threads that will b attached when the device dri starts
TRACE	0	Debugging option
UNIT	TAPE	Unit name to be used for dyn allocation
BUFFNO	16	Number of 65K buffers used routines
VOLCOUNT	255	Maximum number of volumes can be mounted
STORCLAS	None	SMS Storage Class
DATACLAS	None	SMS Data Class
MGMTCLAS	None	SMS Management Class

Parameter	Default	Description
UNADELAY	2 Minutes	Number of minutes to wait before de-allocating tape drives
SHAREDB	No	Is the VSAM database shared among multiple z/OS Device Driver address spaces?
DYNMSG	No	Are dynamic allocation messages displayed?
STACKSESS	Yes	Should multiple sessions be stacked on media?

VSAM File Parameters

The z/OS Device Driver uses a VSAM file to correlate the BrightStor ARCserve Backup media name with the six-character z/OS tape VOLSERS. You can use the CASVTUTL utility program to update the contents of the file. It uses the following parameters:

Parameter	Format	Description
LIST	LIST	Lists the contents of the BrightStor ARCserve Backup database file
DELETE	DELETE MEDIA= BrightStorEB Media Name	Delete an entry from the BrightStor Enterprise Backup database file
PURGE	PURGE MEDIA= BrightStor EB Media Name	Deletes an entry from the BrightStor ARCserve Backup database and calls the TMS exit scratch it from the TMS Catalog

Parameter	Format	Description
IMPORT	IMPORT	Adds an entry to the BrightStor ARCserve Backup database file from the CASPORT dataset
EXPORT	EXPORT MEDIA= BrightStorEB Media Name	Updates the CASPORT dataset from the BrightStor ARCserve Backup database file

Operator Commands

The z/OS Device Driver supports the following commands:

Command	Task
STOP	Shuts down the device driver
TRACE	Alters the TRACE level set in the PARM file
STATS	Alters the STATS level set in the PARM file

Activate the Scratch Mainframe Media Option

If you are using BrightStor CA-1 in your BrightStor ARCserve Backup for Mainframe Linux environment, you can activate the Scratch Mainframe Media option.

With this option activated you can:

- Automate the process of moving z/OS tape media from the save set to the scratch set after the retention period of the media expires.
- Recycle expired media rather than use new or blank media for all of your storage needs.

To activate the Scratch Mainframe Media option

1. Using a text editing application, open the BrightStor ARCserve Backup database configuration file, labeled `cabd.cfg`, located in the following directory:

```
$BAB_HOME/config
```

Locate the option labeled `SCRATCH_MAINFRAME_MEDIA`. Set the value of this option to `TRUE` as shown in the following example:

```
SCRATCH_MAINFRAME_MEDIA=TRUE
```

2. Save your changes and close the `cabd.cfg` file.

Note: You can disable this option by changing the value of the `SCRATCH_MAINFRAME_MEDIA` option from `=TRUE` to `=FALSE`.

Start, Stop, and View Status

After you install and configure BrightStor ARCserve Backup, you can use the `cstart`, `cstop`, and `cstatus` commands to quickly start, stop, and view the status of BrightStor ARCserve Backup. The following sections include information on each of these commands.

Use the `cstart` Command

To start BrightStor ARCserve Backup using the `cstart` command:

1. Log in to the selected host as the superuser (root user).
2. From the command line, enter:

```
# cstart
```

3. After you enter `cstart`, you should see an output similar to the following:

```
Starting BrightStor ARCserve Backup...
```

```
Please wait for all services to start. This may take a few minutes...
```

```
BrightStor ARCserve Backup GUI daemons started...
```

Note: If you enter `cstart` and BrightStor ARCserve Backup is already running, a message appears to notify you that BrightStor ARCserve Backup is already started.

Use the `cstop` Command

To stop BrightStor ARCserve Backup, take the following steps:

1. Log in to the selected host as the superuser (root user).
2. From the command line, enter:

```
# cstop
```

3. After you enter `cstop`, you should see an output similar to the following:

```
#cstop
Stopping BrightStor ARCserve Backup...
Waiting for BrightStor ARCserve Backup to exit(0)...
BrightStor ARCserve Backup unloaded successfully
BrightStor ARCserve Backup GUI daemons stopped
```

Use the `cstatus` Command

To view the status of BrightStor ARCserve Backup, take the following steps:

1. Log in to the selected host as the superuser (root user).
2. From the command line, enter:

```
# cstatus
```

3. If BrightStor ARCserve Backup is running, you should see an output similar to the following:

```
caservd      6507
cadiscovd   6616 6560
cauthd      6841
caloggerd   6842
cadbd       6858
camediad    7924 7921 7823 7828 7817 7798 7563 7077 6971
caqd        13773
staging     16789
cprocess

cacommd     27219 15549 15548 15518 13612 13609 13371
httpd       6489 15516 15542

dbclean

MergeCat
```

Appendix B: Alternate Installation Information

To simplify and expedite installing and upgrading BrightStor ARCserve Backup, the following alternative methods are available to automate the process:

- Silent installation
- Silent upgrade
- Installation using Unicenter Software Delivery

The silent installation and upgrade methods are used to install or upgrade BrightStor ARCserve Backup on a local computer without user intervention. You can use the Unicenter Software Delivery method to install BrightStor ARCserve Backup on a remote computer or a group of remote computers. All these methods will install BrightStor ARCserve Backup with minimal user interaction, using a response file containing all the information required to complete the installation.

The following sections include information about each of these alternate installation methods.

Silent Installation

During an interactive installation, many of the BrightStor ARCserve Backup components require you to enter installation information (for example, the installation directory or the components you want to install). With a silent installation, you can perform a non-interactive installation. A silent installation collects installation information from a previously created response file, and eliminates the need for user interaction.

You can create a response file using the `install_response` script. You can use the response file multiple times on any computer with the same operating system as the computer on which you created the file. Using a response file simplifies the installation process by eliminating the need for redundant data entry on each computer on which you want to install BrightStor ARCserve Backup.

If you have multiple computers with different operating systems in your environment, you must create a response file for each operating system.

Important! *You cannot create a response file for a computer with one operating system, and then use it to install BrightStor ARCserve Backup on a computer with a different operating system.*

The default response file name is `install_bab.rsp`, and it is stored in the `/tmp` directory.

Note: If you have a previous version of BrightStor ARCserve Backup or BrightStor Enterprise Backup components installed on a system, they will be upgraded or migrated automatically during the silent installation procedure.

Create a Response File

You must execute the `install_response` script to create a response file that you can use for silent installation. The output script dialog can vary depending on the platform on which you are installing BrightStor ARCserve Backup.

A typical `install_response` script presents the following prompts:

1. The script first presents the Computer Associates Licensing Agreement. You must read the terms and conditions regarding the use of the product and agree to these terms to proceed with the installation. If you do not agree, the installation process stops.

2. You are asked if you want to view the Silent Installation Notes. These notes provide information to help you install BrightStor ARCserve Backup silently or using Unicenter Software Delivery. Press Enter to view the Silent Installation Notes or enter n to proceed with the installation process.
3. You are prompted to specify the path (location) to where you want to create the response file. The default location is /tmp.
4. You are asked to select the BrightStor ARCserve Backup components you want to install, and specify the installation directory in which to install these components. BrightStor ARCserve Backup verifies your choices and asks you if you want to continue with the installation.
5. You are asked if you want to update the profile files and have BrightStor ARCserve Backup update its environment related variables every time you log in. Additionally, the install_response script provides you with the name and path to a file (generated automatically) that you can use to source the environment variables.
6. You are asked if you want to enable automatic startup and shutdown of all the BrightStor ARCserve Backup agents you are installing.

The script then creates the response file and stores it in the default location or the location that you specified previously.

Perform a Silent Installation

To perform a silent installation, take the following steps:

1. On the server, log in as root.
2. If the BrightStor ARCserve Backup packages are on CD, mount the CD on your local system.
3. To start the installation, go to the directory where you have mounted the CD; for example:

```
# cd /mnt/cdrom
```

4. Run the following command:

```
./install_silent -f response_file_name
```

Appendix C: Directory and File Locations

This appendix provides a description of the directory and file locations on the BrightStor ARCserve Backup server to let you quickly identify and familiarize yourself with the product layout.

Directories

The following directories are located under `$BAB_HOME`:

- `UNSUPPORTED`—The directory used to house functionality that is available to clients, but not currently supported by BrightStor ARCserve Backup
- `bin`—Includes BrightStor ARCserve Backup client binaries (command line utilities)
- `config`—Includes BrightStor ARCserve Backup configuration files
- `data`—Includes BrightStor ARCserve Backup internal data (release specific and discovery information)
- `dbase`—Includes the BrightStor ARCserve Backup database
- `dbase/tmpcat`—Includes the BrightStor ARCserve Backup temporary location for catalog files
- `drivers`—Includes BrightStor ARCserve Backup device drivers (AIX only)
- `doc`—Includes BrightStor ARCserve Backup documents
- `httpd`—Includes BrightStor ARCserve Backup java GUI files
- `jobscripts`—Includes saved BrightStor ARCserve Backup job scripts

- lib—Includes BrightStor ARCserve Backup run-time libraries
- logs—Includes BrightStor ARCserve Backup log files
- man—Includes BrightStor ARCserve Backup man pages
- newconfig—Includes the original BrightStor ARCserve Backup configuration files
- queue—Includes BrightStor ARCserve Backup jobs
- reports—Includes all BrightStor ARCserve Backup reporting tools and logs
- sbin—Includes BrightStor ARCserve Backup server binaries (daemons)
- snmp—Includes the BrightStor ARCserve Backup MIB (Management Information Base) file

Configuration Files

The following configuration files are located under \$BAB_HOME/config:

- cadbd.cfg—BrightStor ARCserve Backup Database Configuration File
- caloggerd.cfg—BrightStor ARCserve Backup Logger Configuration File
- camediad.cfg—BrightStor ARCserve Backup Media Server Configuration File
- caserv.cfg—BrightStor ARCserve Backup Services Configuration File

- `cprocess.cfg`—BrightStor ARCserve Backup Task Related Configuration File
- `discovery.cfg`—BrightStor ARCserve Backup Discovery Configuration File
- `port.cfg`—BrightStor ARCserve Backup uagent Communication Configuration File
- `snmpd.conf`—BrightStor ARCserve Backup SNMP Configuration File
- `tapecopy.cfg`—BrightStor ARCserve Backup Tapecopy Configuration File
- `rpc.cfg`—BrightStor ARCserve Backup RPC Port Customization Configuration File
- `queue.cfg`—BrightStor ARCserve Backup Queue Scheduler Service Configuration File
- `unisrvd.cfg`—BrightStor ARCserve Backup External Command Configuration File

For more information about a configuration file, see the corresponding man page.

Log Files and Directories

The following log files and directories are located under `$BAB_HOME/logs`.

Log Files

- BrightStor.log—BrightStor ARCserve Backup Activity Log
- cadbd.log—BrightStor ARCserve Backup Database Log
- cadiscovd.log—BrightStor ARCserve Backup Discovery Log
- Staging.log—BrightStor ARCserve Backup Disk Staging Purged Log
- camediad.log—BrightStor ARCserve Backup Media Server Log
- caqd.log—BrightStor ARCserve Backup Queue Log
- caservd.log—BrightStor ARCserve Backup Services Log
- cauthd.log—BrightStor ARCserve Backup Authentication Log
- pfc.log—BrightStor ARCserve Backup Preflight Check Utility Log
- tapecopy.log—BrightStor ARCserve Backup Tapecopy Log

Log Directories

- cas_user_logs—BrightStor ARCserve Backup User Generated Logs
- cprocessLogs—BrightStor ARCserve Backup Debug Logs
- pfcLogs—BrightStor ARCserve Backup Preflight Check Utility Logs
- sessionSummary—BrightStor ARCserve Backup Job Session Summary Information

Additional File and Directory Information

In addition to the files and directories located under `$BAB_HOME`, the following files and directories are created when you install the BrightStor ARCserve Backup Server:

- CA Licensing is automatically installed in the following directory:

```
/opt/CA/SharedComponents/ca_lic
```

- A file is created in `/etc/env.bab.sh` that contains the environment variables required for using BrightStor ARCserve Backup

The following files and directories are created when you install a BrightStor ARCserve Backup agent:

- CA Licensing is automatically installed in the following directory

```
/opt/CA/SharedComponents/ca_lic
```

- The BrightStor ARCserve Backup Common Agent is automatically installed in the following directory

```
/opt/CA/BABcmagt.
```

After the installation of a BrightStor ARCserve Backup agent, a link to the agent is created in `/usr/bin`. For example, the following link is created for the BrightStor ARCserve Backup Common Agent:

```
lrwxrwxrwx 1 root other 24 Apr 24 16:05 uagent
-> /opt/CA/BABuagent/uagent
```


Appendix D: Device Driver Messages

This appendix provides explanations for the messages displayed by the device drivers.

CASVTSRV: Authorization Check Failed

Reason:

The device driver needs to run APF authorized.

CASVTSRV: Invalid TCPJOBNAME Value Found

Reason:

An invalid TCPJOBNAME parameter was found in the PARM file.

CASVTSRV: LOAD Failed for Tape Manager Exit

Reason:

The device driver was not able to load the TMS Exit.

CASVTSRV: DEB Queue is Active in Main Task

Reason:

This is an information message.

CASVTSRV: CASVT390 Tape Server Initializing

Reason:

This is an information message.

CASVTSRV: CASVT390 Tape Server Initialization Complete

Reason:

This is an information message.

CASVTSRV: Invalid Trace Parameter Specified

Reason:

An invalid console TRACE command was issued.

CASVTSRV: Invalid STATS Parameter Specified

Reason:

An invalid console STATS command was issued.

CASVTSRV: Invalid Command Specified

Reason:

An invalid console command was issued.

CASVTSRV: Stopping CASVT390 Tape Server Threads

Reason:

This is an information message.

CASVTSRV: All Threads have Terminated

Reason:

This is an information message.

CASVTSRV: Waiting for threads to Complete

Reason:

This is an information message.

CASVTSRV: Checking Thread Status

Reason:

This is an information message.

CASVTSRV: Cannot Open Parameter File

Reason:

The device driver cannot open the PARM file and is running with default values.

CASVTSRV: Running with Defaults

Reason:

The device driver cannot open the PARM file and is running with default values.

CASVTSRV: Invalid THREADS Value Found

Reason:

An invalid THREADS parameter was found in the PARM file.

CASVTSRV: Invalid PORT Value Found

Reason:

An invalid PORT parameter was found in the PARM file.

CASVTSRV: Invalid STATS Value Found

Reason:

An invalid STATS parameter was found in the PARM file. Running with default value of 0.

CASVTSRV: Defaulting to STATS=0

Reason:

An invalid STATS parameter was found in the PARM file. Running with default value of 0.

CASVTSRV: Invalid TRACE Value Found

Reason:

An invalid TRACE parameter was found in the PARM file.
Running with default value of 0.

CASVTSRV: Defaulting to TRACE= 0

Reason:

An invalid TRACE parameter was found in the PARM file.
Running with default value of 0.

CASVTSRV: Invalid HLQ Value Found

Reason:

An invalid HLQ value was found in the PARM file.

CASVTSRV: Invalid TapeExit Value Found

Reason:

An invalid TAPEEXIT parameter was found in the PARM file.

CASVTSRV: Removing Exit ARCTVEXT

Reason:

An invalid TAPEEXIT parameter was found in the PARM file.

CASVTSRV: Authorization Check Failed

Reason:

APF authorization failed for the device driver subtask.

CASVTAPE: CASVTAPE Failure Setting Recovery

Reason:

This is an information message indicating the device driver could not establish recovery.

CASVT390: Enter C to Close Connection to xxxxxxxx

Reason:

Select processing exceeded IPTIMEOUT Value. Enter C to close connection.

CASVT390: Enter C to Cancel Mount of xxxxxx on yyyy

Reason:

The device driver is attempting to mount volume xxxxxx on device yyyy. Enter C to cancel the mount request.

CASVTAPE: Terminating CASVTAPE SubTask

Reason:

This is an information message.

CASVTSRV: Invalid timer Value Found

Reason:

An invalid TIMER parameter was found in the PARM file.

Appendix E: Frequently Asked Questions

This appendix provides answers to frequently asked questions to help you quickly resolve issues that may arise when using BrightStor ARCserve Backup.

What platforms does BrightStor ARCserve Backup server run on?

The backup server of BrightStor ARCserve Backup has been optimized to deliver high performance, scalability, reliability, and deployment flexibility on the following platforms:

- Windows NT/2000/XP/2003
- AIX
- HP-UX
- Sun Solaris
- Tru64
- Major Linux platforms (including Mainframe Linux)

For the most up-to-date list of supported platforms refer to the README file or access the Computer Associates web site at ca.com.

How does BrightStor ARCserve Backup fit into the BrightStor solution family?

Computer Associates has identified the following three essential components for its storage strategy:

- Storage Management
- Storage Infrastructure
- Data Protection

All Computer Associates storage products fit into one of these three components and constitute the BrightStor family of solutions. The Data Protection component encompasses backup and recovery products in the BrightStor product family. BrightStor ARCserve Backup is a part of the Data Protection product.

My corporate backup policies mandate that I maintain a near-line backup of my data for faster recovery. How can I use BrightStor ARCserve Backup to meet this requirement?

BrightStor ARCserve Backup provides you with the capability to back up to a local or remote disk in tape format. This provides the capability to maintain a near-line backup for faster recovery. In addition, the backup to disk allows you to perform policy-based data migration between disks and also to stage data before it is backed up to media. Because the backup of the data to disk is in tape format, the backup of the staged data from disk to tape can be achieved through a tape copy, which provides improved backup speeds.

I manage several terabytes of data, which require me to manage several thousand tapes within the library and at offsite vaults. How does BrightStor ARCserve Backup help me to ensure the required media is available when I need it?

BrightStor ARCserve Backup delivers a mainframe class media management tool integrated with the backup server. This tool provides the capability to track and manage media within the library and in offsite locations.

What media format does BrightStor ARCserve Backup use?

BrightStor ARCserve Backup writes data to media using Computer Associates proprietary media format. The media format used in BrightStor ARCserve Backup is the same format Computer Associates uses in all its storage products. BrightStor ARCserve Backup has the ability to read media formats such as SIDF, ASM, MTF, CPIO, and Tar.

What tape format does BrightStor ARCserve Backup use?

BrightStor ARCserve Backup writes data to tape using the Universal Tape Format (UTF). This compatibility allows you to move tapes between various platforms, including BrightStor ARCserve Backup for Windows and BrightStor ARCserve Backup for NetWare.

My backup environment is unique and requires a reasonable amount of automation. Does BrightStor ARCserve Backup allow me to customize my backup jobs?

Yes. BrightStor ARCserve Backup features an extensive command line interface. Many backup, restore, and management functions that are accomplished through the web-styled graphical interface have an equivalent command line. This provides you with the capability to write consistent scripts that suit your environment needs and automate your backup jobs.

How do I know what amount of memory is free on the system?

BrightStor ARCserve Backup uses free memory only when a backup or restore job runs. The memory is allocated when the job starts, and is freed when it completes. To find out the available free memory, create an environment with all the applications that need to be running during the backup period, and then check the free available memory. You can use a system administration command, such as `vmstat` to view the available system memory.

What protocols can be used to back up a NetWare server under BrightStor ARCserve Backup?

BrightStor ARCserve Backup can use TCP/IP or IPX/SPX protocols to back up NetWare servers.

How can I be informed of the latest updates to BrightStor ARCserve Backup products?

All support patches are posted on the Computer Associates web site at ca.com after they are publicly released. In addition to checking the website, you can also subscribe to E-News, which is a periodic news update that focuses on support issues and covers the BrightStor ARCserve Backup family of products.

Which devices does BrightStor ARCserve Backup support?

Refer to the Computer Associates website for a certified device list to confirm the firmware and model of the supported device:

<http://esupport.ca.com/public/storage/ascdls.asp>

I would like to be notified in case of a problem with my backup. How can I do this?

BrightStor ARCserve Backup provides the best alert notification in the industry.

BrightStor ARCserve Backup provides event-based notification using Unicenter NSM and SNMP. In addition, you can specify a printer name or email address as an output device to send the activity log.

I am receiving a media error on my backups, and the media in the drive are new. What can I do to get my problem resolved?

Read the following recommendations for the care and operation of media:

Media:

- Check the documentation for your drive to verify which media are approved. Media of an unapproved brand or type can fail consistently in a particular drive.
- Only use media of the proper length. Some media drives can use a variety of different-length tapes. Tapes vary in thickness, tension, and particle density. As a result, a drive must be designed to properly handle those differences without causing damage to itself or the media.

Cleaning Cartridge:

- Clean the media drives using cleaning cartridges. The cleaning cartridge will clean not only the head, but also the full tape path, preventing both read/write and tape positioning problems.
- Follow the recommendations from the media drive manufacturer. Use only the recommended cleaning media and follow the manufacturer's instructions.
- Some cleaning media are only good for a specific number of uses. If they are used more than specified, the effectiveness can be reduced. Most manufacturers recommend cleaning the drive after every 25 to 30 hours of use. Some manufacturers also recommend cleaning the drive after using a new tape for the first time.

What is the difference between a GFS rotation job and a custom rotation job?

A GFS (Grandfather-Father-Son) rotation is a set rotation scheme that automatically creates three media pools. These are the daily, weekly, and monthly pools. This set rotation is limited in customization and must auto-name the media involved. A custom rotation scheme is completely configured by the user. You can configure the properties of the pool or pools involved, the days to backup, and other properties.

How can I modify the BrightStor ARCserve Backup Domain settings, such as the Primary server, Secondary server, and Domain name?

To modify domain settings, perform the following steps:

1. Ensure that no jobs are running, and use the following command to stop the BrightStor ARCserve Backup services:

```
cstop
```

2. Run the bab_configure script.
3. When prompted, specify your Primary and Secondary Domain servers and the BrightStor ARCserve Backup Domain name (if the local is primary).
4. Use the following command to start the BrightStor ARCserve Backup services:

```
cstart
```

Can I schedule different types of backups to run automatically?

Yes. You can select from full, differential, or incremental backups.

How does BrightStor ARCserve Backup protect data from virus infection?

Computer Associates leading antivirus solution, eTrust InoculateIT, is now completely integrated with BrightStor ARCserve Backup, offering full detect-and-cure functionality. As an integrated part of the backup process, BrightStor ARCserve Backup passes files through the eTrust virus-scanning engine before writing the files to tape. Virus scanning ensures that viruses are detected during the backup without any additional steps or time-consuming routines adversely affecting the backup workflow. As a result, BrightStor ARCserve Backup eliminates the possibility of restoring a virus from the tape, ensuring problem-free data.

Where is the best place to back up my Linux data?

This depends on your site. You can back up and save your data on OS/390, on Mainframe Linux, or on a distributed server.

Will BrightStor ARCserve Backup for Mainframe Linux interface with BrightStor CA-1, BrightStor CA-Dynam/TLMS, or BrightStor VM:Tape?

Yes. There is built-in integration with our mainframe tape management systems. You can back up your critical Linux data on the mainframe, while the mainframe TMS products protect the tape itself. When the data is deleted from the Advantage Ingres database, a call is made to the mainframe tape management system to mark the tape as scratchable.

What is the benefit of backing up data to mainframe tapes?

Through a combination of online facilities and batch utilities, the tape management systems provide everything necessary to efficiently control, protect, and manage your tape resources. These tape management systems allow you to account for every tape in your data center, regardless of whether it is in your library or at a disaster recovery vault. The tape management systems increase tape data set protection and personnel productivity, and can also help reduce costs by automating all aspects of tape management.

Do I need a BrightStor ARCserve Backup server running on every Linux system?

No. You can run one copy of the BrightStor ARCserve Backup for Mainframe Linux server and run the BrightStor ARCserve Backup agents on other systems.