



ZCB User Guide

Release 4.2

Zmanda, Inc.

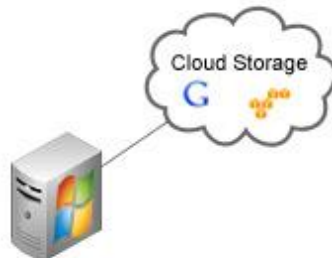


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Introduction to ZCB

ZCB is the complete backup solution for Windows servers. It backs up file systems and live applications such as Microsoft Exchange and SQL Server to a highly dependable storage cloud – Google Cloud Storage.

User Manual

Overview

ZCB is a secure and convenient way to back up Windows workstations and servers to a Local Folder or to Google Cloud Storage. With ZCB, you can select from the following backup types:

- Windows NTFS files and folders
- Microsoft SQL Server 2000, 2005 and 2008
- Microsoft Exchange Server 2003, 2007 and 2010
- Microsoft Share Point Server 2007, 2010 and WSS 3.0
- Windows System State (registry, certificate server and active directory information)
- MySQL Server 5.0 and 5.1
- Oracle Server 11i

SQL Server, Exchange Server and SharePoint server configurations are automatically discovered by ZCB. No additional configuration is necessary. ZCB has options to use native Windows compression and supports digital certificate-based encryption for the backup data.

System Requirements


To be able to use ZCB, please check that your system meets these requirements:

- Windows XP (Home or Pro) with SP2 or higher.
- Windows 2003 with SP2 or higher.
- Windows Vista, Windows 7, Windows 2008.
- Java Runtime Environment (JRE) 6 Update 20 or higher.
- The Volume Shadow Copy Service must be enabled. Although the Volume Shadow Service is enabled by default, it may have been turned off after Windows installation. To ensure that it is running:
 - Right-click the **My Computer** icon and choose **Manage** from the pop up menu.
 - Expand the Services and Applications tree and locate the **Volume Shadow Copy** Service. If it is not started, change the General Properties to make the Startup Type **Automatic** rather than **Manual**.
- The Remote Registry Service must be enabled before installation.
- ZCB must be installed and all ZCB operations must be performed as a user that has Administrator privileges.

- ZCB stores the metadata about the backup archives in the Installation folder and not in the Local Backup Folder. This metadata is very important for restoration of backup images. Please ensure sufficient disk space is available in the Installation folder for storing the metadata files. The amount of space required depends on number of backup sets, backup images and number of files/objects in each backup image.
- ZCB requires access the following TCP ports: Port 10080 & 10081, which are default ports used by ZCB for backup and restore. If the default ports are in use, you can specify alternate ports to be used by ZCB. Please refer to the [Changing TCP Ports for use by ZCB](#) section in this document.

Installation

Installing ZCB involves two steps – installation of the software and importing the ZCB certificate into the software. Both 32bit Windows and 64bit Windows ZCB software and certificate are available under the [Zmanda Network Downloads](#) screen.

 In case you do not find the ZCB software or certificate and you have a valid subscription to ZCB, please contact Zmanda Support.

Installation

ZCB uses InstallShield installer and self-extracting **.exe** files for installation. After downloading, double-click the install file to begin installation. The installer will check for system requirements, such as Java JRE, before installation.

Importing the ZCB certificate

Once ZCB is installed, download the certificate from the Zmanda Network **Downloads** screen. Be sure to use the *save as* option and name the certificate *cloud.zmanda*. Once downloaded, import the certificate into ZCB using the **Cloud > Import Cloud Certificate** menu option.

The certificate has to be downloaded and imported into each ZCB instance you have running. You can use different ZCB certificate if you want to use different Google accounts.

Unattended installation

If you are planning to install ZCB on multiple machines, you should record the user input for playback. The recorded user input can be used to install ZCB by command line on multiple machines in an unattended manner. Depending on user privileges, the command prompt may need to be run as Administrator.

The recording file will contain all user input for playback. To write a recording file for installation, use the command: **setup.exe /r /f1"<filename.iss>"**

To write a recording file for uninstallation, use the command: **setup.exe /r /removeonly /f1"<filename.iss>"**

The ZCB installer can read the user input recorded file from the same directory. Alternate location for user input can be provided using /f1 option. The installation log file will be created in same directory (default: Setup.log). Alternate location for the log can be provided using /f2 option.

An example command for replaying user input from C:\Temp\Setup.iss file:

```
setup.exe /s /f1"C:\Temp\Setup.iss"
```

The command will finish before the installation or uninstallation process is completed. Use /WAIT flag if you want the setup.exe command to wait for the process to be completed. For example: Run the following installation command that will wait till process is completed in Windows command shell

```
start /WAIT setup.exe /w /s /f1"C:\tmp\Setup.iss"
```

The Zmanda Network provides default install.iss and uninstall.iss that can be used for unattended installation and uninstallation. These setup files assume that

1. ZCB will be installed in the **C:\Program Files\Zmanda\Zmanda Cloud Backup** folder. You will be asked to provide a password for the **amandabackup** user. Please note this password as it may be required for advanced configurations!
2. ZCB uninstallation will not preserve configuration data

Furthermore, utilities are provided to import and export existing ZCB configurations, to easily transfer backup sets to new machines.

Export_ZCBConfiguration.bat will export an existing configuration into a .zip file, which can then be used to automate the installation of ZCB on new machines. Export_ZCBConfiguration.bat is located in C:\Program Files\Zmanda\Zmanda Cloud Backup\bin/.

- Run the file from the command prompt.
- You must specify the export location from the command prompt as well.
- For example, to export to C:\Export_Folder you would enter
 - C:\Program Files\Zmanda\Zmanda Cloud Backup\bin\Export_ZCBConfiguration.bat
C:\Export_Folder
- A file named "ZCB.zip" is now in C:\Export_Folder

Import_ZCBConfiguration.bat will import the ZCB.zip folder created by Export_ZCBConfiguration.bat

The import script needs access to the exported ZCB.zip file. Copy it to a local folder or provide path to the network share.

- Make sure that there are no existing backup sets on the new machine to avoid any conflicts during the import process.
- Open the command prompt and run **Import_ZCBConfiguration.bat** from the /bin/ directory.
- The following example uses the same destination folder as above.
 - C:\Program Files\Zmanda\Zmanda Cloud Backup\bin\Import_ZCBConfiguration.bat
C:\Export_Folder

On successful completion of the import process, open the ZCB UI to make sure that all the backup sets, their respective schedules and configurations such as Backup Folder, Local & Cloud Retention period, Compression, etc are correctly imported to the new machine. In case the backup sets are configured with encryption, the encrypted certificate will need to be imported on the destination machine.

Note: The Backup Folder for the local storage will be modified depending on a target machine's operating system if default path is used. On the other hand, if the user modifies this location when they create a backup set template, then ZCB on all the other machines will have the same modified location.

Run Validate Backup Set before running backups to make sure that all the configurations are in good shape.

Configuration

Backup Sets

A backup set defines the parameters (the what, how, where, and when) for backing up a group of directories or an application. Each backup set can only be of a single type. For example, you cannot back up an Exchange server and Windows System state in the same backup set. Instead, you must create a new backup set for each type of backup.

Backup set names are limited to 32 characters. You cannot use Windows reserved characters, such as `\|?_.<>*":+&-`

Backup Levels

ZCB supports full, differential and incremental backups.

Full backup: This type of backup makes ZCB back up **all** of the data associated with the backup set. Full backups are also referred to as backup level 0.

Differential backup: This type of backup makes ZCB back up **only** the data which changed since the *last successful full backup*. This is also referred to as backup level 1.

Incremental backup: This type of backup makes ZCB back up **only** the data which changed since *the last successful full or last incremental backup*. This is also referred to as backup level 2 (or more).

Choosing differential and incremental backup reduces the amount of data to be backed up and uploaded Google Cloud Storage. Incremental backups can be smaller in size than differential backups but introduce further complexity to the restore process. But, differential backups allow for faster restoration compared to incremental backups.

It is not possible to mix incremental and differential backups for a single backup set. You may only choose one or the other, or neither.

- ☞ Please note that restoration from an incremental or differential backup **requires** the backup data from the corresponding full backup. Hence, as a best policy, please ensure that retention policies and backup locations for the full and incremental/differential backups meet this condition.
- ☞ For example: keeping full backup on local disk while keeping incremental/differential backups on the cloud will make the incremental/differential backups useless if the disk containing the full backup data is lost or damaged.

Working with Backup Sets

Backup sets are listed along the left edge of the ZCB display. While on the **Backup** tab, you can create, edit, activate, deactivate, validate, or delete backup sets by right-clicking a set and choosing from the pop-up menu. The same operations are also available in the **File** menu in the user interface.

Activating/Deactivating a backup set: An Activated backup set will perform all its scheduled backups and be eligible for a restore operation. A Deactivated backup set will neither perform scheduled backups nor be eligible for a restore. You can re-activate a Deactivated backup set at any time, and the backup set will begin honoring the scheduled backups again. By default a backup set is in the activated state.

Validating a backup set: This is a simple way to check whether the essential configuration for the backup set is correct or not. If there are errors during validate, it indicates that the ZCB won't be able to use the configuration provided by the user to perform backup/restore operations correctly. Backup set configurations are automatically validated when configurations are saved as well as before any backup run is performed.

Deleting a backup set: Choosing the Delete Backup Set operation will present the user with the following two options. Select the correct option and press OK to continue with the deletion. Press CANCEL to abort the operation.

Delete this backup set configuration and all associated backup data from cloud and disk.

- Selecting this operation will remove the backup set from ZCB. Additionally, all data associated with the backup set, on both the local disk and on the cloud, will be deleted.
- A popup will appear to confirm the choice.
- This operation **cannot** be undone.

Just delete the configuration for this backup set from this computer, but retain the associated backup data.

- Selecting this operation will remove the backup set from ZCB, but all data will be left intact on both local disk and the cloud.
- A popup will appear to confirm the choice.
- The backup set can be recovered by [Restoring the Backup Catalog](#).

Configuring Backup Sets

ZCB makes it easy to configure backup sets by grouping the configuration options in four logical groups - **Backup What, Backup How, Backup Where** and **Backup When**.

Backup What

The **Backup What** section lets you select a **Backup Type** (such as **Windows File System**, **Windows system state**, and a number of common applications such as **Exchange**).

Backup Where

ZCB provides the flexibility of backing up to the cloud, to a local disk or a combination of both. It also allows retention periods to be configured separately for cloud and disk storages. This means that you have the flexibility to implement a disaster recovery strategy of your choice.

You can use ZCB to perform the following backup solutions:

Backup to Cloud

This new operation is available from ZCB 4.0 onwards. This operation makes ZCB perform backups and transfer the backup data directly to the cloud. The backup data is not stored on the local disk. Generally, this operation is used when ZCB is the off-site backup solution while a separate solution is used for local backups.

Backup to Disk

This operation directs ZCB to perform backups and store them only on the local disk. The backup data is not uploaded to the cloud. Generally, this operation is used as the first step in a two-step approach to cloud backup where the data is first backed up to local disk and then uploaded at a later time, given the bandwidth and availability of other resources.

Please make sure that the local folder you select has enough available space. While calculating this space, please keep in mind the retention policy configured in the **Local Storage** option under the **Backup Where** section. Please refer to the [Retention policies](#) section of this guide for more details.

Backup to both disk and cloud

This operation directs ZCB to first perform backup to disk and, upon its completion, immediately start uploading it to the cloud. The backup data is stored on the local disk as well as on the cloud. The backup set's Retention Policy governs how long the data is kept locally and in the cloud. Please refer to the [Retention policies](#) section for more details.

Generally, this operation is used when a local copy of backup data is required for faster restores and extra redundancy. Cloud storage is used as the secure offsite data protection solution.

Please make sure that the local folder you select has enough available space.

Upload from disk to cloud

This operation directs ZCB to upload a backup stored on the disk to the cloud.

At times, business dictates that the best time to perform a backup is not necessarily the best time to perform an upload. The upload from disk to cloud function allows users to schedule backups at a different time than they are uploaded.

The most common use of this function is for backups scheduled throughout the day, which are later uploaded overnight.

Cloud Storage Options

Google stores your data in datacenters located across the world. You can choose from United States and Europe.

It is possible to have different cloud storage location for different backup sets. However, please note that once configured, you can't change the cloud storage location for a backup set. If data for a single backup set were uploaded to multiple locations, it will be difficult for ZCB to perform restores.

Local Disk Storage Options

ZCB supports backing up to a local disk, an external hard disk or a network mapped drive.

Retention policies

A retention policy tells ZCB how long to retain backup data on local as well as cloud storage. Please consider the size of backup data and available disk space while choosing the retention period. The retention policy is implemented by ZCB as a Windows scheduled task with the name-

Purge_ZIB_Backups. This task is performed at midnight every day. This task should not be removed from the Windows task scheduler. If the machine is not running at the time, expired backup images on the local folder and cloud are removed when the next scheduled task is run successfully.

Backups are purged according to the following rules:

- When a Full backup's retention expires, the Full backup and all associated Differential and/or Incremental backups are removed.
- When a Differential backup's retention expires, only that backup is removed.
- When an Incremental backup's retention expires, that backup and all later Incremental backups are removed.

Note: If some uploads are not complete (are in progress or paused), the data on local disk is not purged until the upload jobs finish or are cancelled.

Note: Changing a retention policy only affects new backups going forward. Previous backups are not affected, to prevent accidental purging of important backup data. If you wish to remove old backups, you can delete them manually from the Report page by right-clicking or clicking the appropriate icon at the top of the page, or by selecting **File -> Purge All Backup Runs Before...**

Retention Override

ZCB provides an option to intelligently retain the last copy of a Full backup from either the disk or the Cloud. Enabling this option ensures the availability of the last Full backup irrespective of the retention policy chosen for the backup set. ZCB will ensure that the last copy of a Full backup will not be deleted even if its retention period expires.

Bandwidth Throttling

By default, ZCB attempts to transfer data to and from the cloud at the maximum possible speed. Hence, ZCB always attempts to use the maximum bandwidth you have available.

If you wish to specify the maximum bandwidth (throttling) ZCB should use for upload and download of data, you can do so. Throttling can be set at a global level (affecting all backup sets) or configured for a specific backup set. For configuring these values globally, across all the backup sets, please go to **Preferences > Bandwidth**. For configuring these limits at a backup set level, so that they override the global values, please go to **Cloud Storage** sub-section in the **Backup Where** section.

ZCB allows you to configure bandwidth throttling in these two ways:

Uniform Throttling:

If you wish to configure uniform throttling values, irrespective of the time of the day and day of the week, then you can simply configure these two options:

Max Upload Rate: This value, in kilobits per second, refers to the maximum bandwidth ZCB will use for uploading backup data to the cloud.

Max Download Rate: This value, in kilobits per second, refers to the maximum bandwidth ZCB will use for downloading backup data from the cloud.

Time-based Throttling:

If you want ZCB to use different throttling values during different hours and different days of the week, then you can configure time based bandwidth throttling. To configure this, click on the **Throttle by Time** button for upload or download. The resulting pop up window will show up the days of the week and different time slots in each day. Each time slot is of 15 minutes in duration.

To begin configuration, you can select the cells from the time table shown and input the desired value in the **Maximum Rate (kbps)** box. Click on **Apply Custom Rate to Selected Slots** to apply the provided value to the selected slots. Please note that configured values take effect only for future data transfers. Any ongoing jobs will continue to use any previously configured values (“unlimited” by default).

For ease of use, ZCB comes with predefined templates for time based bandwidth throttling. You can choose a template from the **Choose Predefined Template** dropdown. If you wish to tweak the template values, you can select the time slots as described above and configure different values.

Secure Transfer (SSL)

ZCB supports secure transfer of data to cloud using OpenSSL version 0.9.8. To enable this, please enable the check box under the **Cloud Storage** sub-section on the **Backup Where** section.

You can select secure transfer to cloud irrespective of whether data is being encrypted using digital certificate encryption.

Please note that if the data being backed up is public, such as public web sites, using secure transfer to cloud may negatively impact data transfer speeds. If faster transfer speeds are essential, try turning this

option off. Internal testing has shown an improvement of 15-20%, but actual performance depends on many external factors.

Backup How

ZCB supports compression and encryption of user data. Data is compressed and/or encrypted during the backup process. It is written to disk or uploaded to cloud only after the encryption/compression is completed. This ensures that, at no point, will the backup data be unencrypted.

The user can specify the following settings:

Compression: This can help save network bandwidth and reduce the storage space required for backups. Compression level can range from **Off** (no compression) to **Max** (maximum compression ratio). Note that higher levels of compression are CPU intensive and may impact system performance. If high compression is desired, scheduling the backup during non-peak hours may be desirable.

Encryption: ZCB uses the industry-standard RSA RC4 algorithm for backup encryption. RC4 is RSA's standard streaming encryption algorithm. ZCB supports Windows PFX (Personal Information Exchange) certificates only. The backup archive stores all encryption metadata information in encoded form, including the certificate that was used to encrypt. The SHA1(secure) hash of the certificate is also stored in the archive.

ZCB performs encryption using Windows PFX (Personal Information Exchange) digital certificates installed for the **amandabackup** user. Please note that this certificate is different from cloud.zmanda certificate downloaded from the Zmanda Network and it is not provided by Zmanda, Inc..

ZCB offers 100% data privacy by allowing users to specify their own digital certificate to encrypt data. Since the encryption certificate is known only to the user, only the user can decrypt the data. If the certificate is lost, encrypted data **cannot** be recovered. Please store the encryption certificate used for encryption carefully.

Before you can enable encryption, you need to import the PFX certificate to the Windows Certificate Store. Please refer to the [Setting up PFX certificates for Encryption](#) section for more details.

To enable encryption using an installed certificate, select the certificate from the **Encryption** dropdown in the **Backup How** section on the **Backup** tab. After specifying the encryption certificate, please click on the Save Backup Set button. This will trigger validation of the backup set. If there is any problem with the encryption certificate, ZCB will show a warning message to you.

☞ Please note that ZCB 4.0 has a known issue for 64 bit platforms. On 64 bit platforms, the automatic population of available certificates in the **Encryption** dropdown doesn't work. As a workaround, you need to use the **Choose Encryption Certificate** option in the **Encryption** dropdown and type in the certificate name manually.

Please note the following important facts about encryption:

- **If the encryption certificate is lost, encrypted data cannot be recovered.**
 - To back up a certificate, follow the instructions in [this Microsoft Knowledgebase Article](#).
 - Certificates may also be backed up using ZCB by creating a non-encrypted File System backup that contains the certificate. Set the retention policy to “Forever” to ensure the certificate is not purged automatically, and take care when manually purging backups.
- ZCB can decrypt the backup image only if the encryption certificate (in the same form as during the backup) is present on the target machine. A renamed certificate of the same form will also be able to decrypt the files. A certificate that has been altered in any other way **cannot** decrypt the files.
- User will be able to view the files (filenames) stored within the archive through Winzip and PKZIP Windows utilities, but will not be able to decrypt through these utilities. Only ZCB can decrypt the backup files.
- It is important that the **amandabackup** user has the same password during backup and recovery process. Otherwise, the decryption during restoration will fail.

Backup When

Pre-backup and Post-backup Actions

ZCB offers the flexibility of running custom commands or scripts before it begins a backup or after it finishes a backup. For instance, if one wishes to copy certain files from outside the backup directory to inside just before backup is run, he/she can configure a pre-backup action. Similarly, if one wants to invoke another program (such as an old data purging script) after backup is completed, a post backup action can be configured.

To configure these actions, please select the backup set from the left hand pane and go to the **Backup** tab. In the **Backup When** section, under the **Backup Set Preferences** tab, you can locate this setting. Please browse for the batch script or other executable program present on your machine that you want ZCB to execute before/after the backup. Then save the backup set configuration.

Please note the following important points:

- If you want to add parameters to the above script or program, then please click on the Pre-backup/Post-backup icon again and add the parameters to the command that is shown by ZCB.
- If the configured Pre-backup or Post-backup actions fail upon being run by ZCB, the backup is marked as failed. The exit status of the failed command can be found in the ZCB log file. If you wish to make ZCB continue with the backup, despite any error in running the command, you can do so by making your script exit with a special exit status of 65531.
- If your script is opening files for reading/writing, make sure that file names are fully qualified file names (e.g. C:\backup\Log.txt). Unqualified names such as “Log.txt” will result in files getting created inside C:\Windows\system32 folder.

User Credentials

If backing up your data requires the permission of some other windows user, you can make ZCB use the credentials of that user. Since ZCB requires administrator privileges to perform a backup, systems administrators can allow ZCB to back up data without granting admin privilege to the user.

To configure ZCB to run as a different user, please select the backup set from the left hand pane and go to the **Backup** tab. In the **Backup When** section, under the **Backup Set Preferences** tab, you can locate this setting. Please provide the username and password of the windows user to be used by ZCB.

Email Notification

You can configure email notifications to be sent when each operation completes. This can be done both at the global level (for all backup sets) or at a backup set level. Please refer to the [Email Notification](#) section for more details.

Scheduling

ZCB offers powerful and completely flexible scheduling options. You can schedule each of the following operations independently– **Backup to cloud**, **Backup to disk**, **Backup to both disk and cloud** and **Upload backup data from disk** at your desired time. For example, this gives you the flexibility to schedule **Backup to disk** operations on weekdays and **Upload backup data from disk** operation on weekends when your bandwidth is not in high demand.

Users may also **Override Retention for this Schedule**. The retention policy specified here will be used in place of the Retention Policy set in the Backup Where section.

To add scheduled backup runs for a backup set, please select the backup set from the left hand pane and go to the **Backup** tab. In the **Backup When** section, under the **Scheduled Backup** tab, click on the **Add schedule** button. This will show you many schedule templates to choose from. Each template is completely customizable. Don't forget to click the **Save Backup Set** button at the bottom of the Backup page to commit the schedule.

Schedules follow the rules for Microsoft Task Scheduler, as outlined in the following document. Different versions of Windows may handle overlapping schedules differently. For details, please refer to this Microsoft Technet article: [http://technet.microsoft.com/en-us/library/cc722178\(v=ws.10\).aspx](http://technet.microsoft.com/en-us/library/cc722178(v=ws.10).aspx)

Setting up PFX certificates for Encryption

A PFX file is a specially formatted file which includes the SSL Certificate, Private Key and optionally any required Intermediate CA Certificates. When you use a PFX certificate for encryption, it works just like a password for encrypting backup data.

Getting a PFX certificate

There are two kinds of PFX certificates – signed certificates and self-signed ones. Signed certificates are issues by third party CAs, such as Verisign. You can find an explanation of the differences between signed and self-signed certificates [here](#).

Unless the backup data is to be sent to some external party (which may want to verify the authenticity of data), self-signed certificates can be safely used for encryption with ZCB. You can generate your own self-signed certificate for free by downloading simple-to-use tools such as [abylon selfcert](#). [Openssl utility](#) also can be used for this purpose.

If you already have a personal certificate but it is not in PFX format

If you have an installed non-PFX certificate, you can export it to a PFX file. Please note that you need to have access to its private key.

To do this, from the Windows **Start** menu, click **Run** and enter **certmgr.msc**. Now, find the certificate to export, double-click it, and then click **Details**. Choose the **Copy To File** option, which will let you select a location for the exported certificate. When exporting the certificate, make sure that:

- The **Yes, export the private key** option is checked (This option will appear only if the private key is marked as exportable and you have access to the private key.)
- the **Delete Private Key if export is successful** option is left unchecked

After the file has been saved, close the **certmgr.msc** utility. The exported certificate should be in a folder that is accessible by the **amandabackup** user.

Importing the PFX certificate

To use encryption with ZCB, you need to import your PFX certificate into Windows certificate store using the procedure described in [Importing the PFX certificate into certificate store for a user](#) section below.

You need to complete this procedure for the following Windows users:

- amandabackup
- Administrator
- The Windows user who has launched the ZCB user interface (if manual backups are going to be performed), say "johndoe".

Importing the PFX certificate into certificate store for a Windows user

1. Log on to the ZCB machine as the desired Windows user.
2. Double click on the PFX certificate file to start the **Certificate Import Wizard**. The password used to protect the private key must be entered. For encryption with ZCB:
 - a. Do NOT select the option - **Enable Strong private key protection**. You will be prompted every time the private key is used by an application if you enable this option.
 - b. Select the **Mark this key as exportable** option.
3. Choose all the default options and complete the import.

Performing Backups

Once you have saved the backup set, you can perform backups. You can either launch a manual backup or add schedules to backup automatically at a specific time.

To run a manual backup, select the backup set from the left hand pane and go to **Backup** page. In the **Backup When** section, under the **Backup Now** tab, choose the operation which you want to run and click on the button just below it to launch the selected operation. To configure scheduled backup runs, please see the [Scheduling](#) section.

Below is the detailed information for all applications you can backup using ZCB.

Windows File System

Overview: ZCB can perform full (all files), differential (only files which changed since last full backup) and incremental (only files which changed since any last successful backup) backups of Windows NTFS file systems. It can backup open files and doesn't have any limit on the size of the files to be backed up. In addition, it can also backup files from an external portable hard drive or a network mapped drive.

Functionality: When backing up an NTFS file system, ZCB lets you select directories and files from a browser tree. You can specify the list of files to be excluded during a Windows file system backup. Windows file systems support wild cards in the exclude specification. Wild cards "*" (match one or more characters) and "?" (match exactly one character) are supported. The pathname in the exclude specification must be the absolute path. For example: User is backing up **C:\Data** directory. User wishes to exclude files under a sub-folder **exclude** and files with ***.jpg** extension. The exclude specification should be "**C:\Data\exclude**" ***.jpg**.

The list of patterns in the exclude specification for Windows file systems should each be separated by a space.

Requirements:

- Only Windows NTFS file system is supported.
- For backing up open files, the Volume Shadow Copy Service must be enabled.
- If your backup set includes files from encrypted volumes, or files that individually have encryption enabled, consider backing up the associated encryption keys so that you can access the files after restoring them with ZCB.

A note about Network Mapped Drives:

You can use ZCB to back up the data on network drive. You may also choose it as your local storage for keeping your local backup archives. Please note the following requirements to make sure that ZCB has the adequate privileges for your desired use case:

- Make sure that amandabackup system/domain user has the permission read/write on the network drive.
- **Only if** you wish to run **Backup to Cloud** operation, please note the following additional requirements

- **Scheduled backups:** Before adding the schedules, please provide the user credentials of amandabackup user in the **Perform backup with specified credentials** section under the **Backup Set Preferences** tab.
- **Manual backups:** You need to be logged on to your Windows machine from Administrator user account. Also, the “administrator” user needs to have permission to read/write on the network drive.

Microsoft SQL server

Overview: ZCB performs VSS based backup of databases and their log files. From ZCB version 4.0 onwards, one can also perform backups of a specific database on a specific SQL server instance. Full and Differential backups are supported. Log only backups are not supported.

Only Full backups are supported for MS SQL 2000 server.

To configure MS SQL server backups, create a new backup set and choose **SQL Server** from the dropdown list in the **Backup What** section. ZCB will discover all SQL Server components and will display them in the Backup What section in the following format:

```
MSSQL-2008\Servername\InstanceName\DatabaseName
MSSQL-2005\Servername\InstanceName\DatabaseName
MSSQL-2000\Servername\InstanceName\DatabaseName
```

From this list, you can select the ones which you wish to back up and save the backup set.

Functionality: ZCB supports Simple Recovery Model, Full Recovery Model and Bulk Recovery Model for SQL server databases. If the database is in Simple Recovery Model, the full backup will contain .MDF, .LDF and .NDF (in case of filegroups) files in the backup image. The differential backup will contain .LDF files. If the database is in Full Recovery Model, the full backup will contain .MDF, .LDF and .NDF (in case of filegroups) files in the backup image. The differential backup will contain .MDF-Offset (partial file of .MDF database that has changed), .LDF and .TRN (transaction logs flushed to the disk) in the backup image. If the database is in Bulk-log Recovery Model, the full backup will contain .MDF, .LDF and .NDF (in case of filegroups) files in the backup image. The differential backup will contain .MDF-Offset (partial file of .MDF database), .LDF and .TRN (transaction logs flushed to the disk) files in the backup image.

Please note the following:

- The master database is only backed up as part of the full backups. During restore of master database, SQL server is stopped and is restarted after restoration.
- Any read-only databases are only backed up as part of the full backups.
- ZCB will only back up MS SQL databases that are in Mounted state.
- A backup set created to backup MS SQL only backs up the MS SQL databases. It does not back up other MS SQL files such as program installation files, etc. To protect an MS SQL server from a

disaster, make sure that you create a separate File System backup set to back up the other crucial MS SQL files.

- Please note that SQL server backup set validation checks for **amandabackup** SQL user but does not check if the privileges are sufficient for backup and recovery.

Requirements:

- The Windows **amandabackup** user must be added as a SQL server user with sufficient privileges. To add the user in SQL server Management Studio, click on Security > Logins > Add New Login. Add the amandabackup user account and give it privileges. You can just add it to the sysadmin server role.
- The Volume Shadow Copy Service must be enabled. This means that its startup type must be either automatic or manual. Please refer to the [Requirements section](#) to know how to do this.
- Microsoft recommends that MS SQL and System State backups should not be run simultaneously.
- The SQL writer service must be running at the time of backup and recovery. Microsoft recommends that the SQL VSS Writer service be automatically started. MSDE writer is not sufficient for backup and recovery.
- Please ensure that you have enabled TCP/IP on your MSSQL server. You can do this using the "SQL Server Configuration Manager" tool.

Microsoft Exchange Server

Overview: ZCB supports full, incremental and differential backups of MS-Exchange. From ZCB 4.0 onwards, one can perform backup of a specific database on the Exchange Server.

To configure MS Exchange server backups, create a new backup set and choose **Exchange** from the dropdown list in the **Backup What** section. ZCB will discover all Exchange Server components (such as Mailbox) and will display them in the Backup What section in the following format:

```
MSEExchange-2010\Servername\MailboxStoreName\File
MSEExchange-2010\Servername\MailboxStoreName\Logs
MSEExchange-2010\Servername\PublicFolderStoreName\File
MSEExchange-2010\Servername\PublicFolderStoreName\Logs
```

```
MSEExchange-2007\Servername\StorageGroupName\MailboxStoreName
MSEExchange-2007\Servername\StorageGroupName\PublicFolderStoreName
MSEExchange-2007\Servername\StorageGroupName\Logs
```

```
MSEExchange-2003\Servername\StorageGroupName\MailboxStoreName
MSEExchange-2003\Servername\StorageGroupName\PublicFolderStoreName
MSEExchange-2003\Servername\StorageGroupName\Logs
```

Functionality: ZCB performs VSS based backup of Store database files (.edb & .stm), transaction logs and checkpoint file for all the Mounted Storage Groups. The Exchange server transaction logs are purged after full and incremental backups of Exchange server. They are not purged after differential backups. An event is logged in the Windows Application Event Logs.

Requirements:

- The Volume Shadow Copy Service must be enabled. Although the Volume Shadow Service is enabled by default, it may have been turned off after Windows installation. Please refer to the [Requirements section](#).
- Run the command `vssadmin list writers` at the Windows command prompt and check that the state of the Exchange Writer is stable. If not (or if there are any VSS errors), restart the **Microsoft Exchange Information Store Service**.
- Latest Exchange service pack must be installed. For example: Exchange 2003 Server Service Pack 2 or later must be installed.
- In case of Windows 2003 Small Business Server edition, the Exchange Writer is **disabled** by default. Please follow the instructions this MS knowledgebase article to enable the Exchange Writer: <http://support.microsoft.com/kb/838183>
- Make sure that the Exchange Storage Groups are in Mounted state.
- Microsoft .NET Framework 3.5 Service Pack 1 must be installed on the ZCB machine. For Exchange 2010 server running on Windows 2008 Server R2 release, .NET 4.0 is required.
- Exchange circular logging must be disabled. Circular logging allows Microsoft Exchange to overwrite transaction log files after the data that the log files contain has been committed to the database. By enabling circular logging, you reduce drive storage space requirements. However, without a complete set of transaction log files, you cannot recover any data more recent than the last full backup. Therefore, in a normal production environment, circular logging is not recommended. For instructions on how to disable circular logging, please follow Microsoft articles below:
 - **Exchange Server 2007, 2010:** <http://technet.microsoft.com/en-us/library/bb331968%28v=exchg.80%29.aspx>
 - **Exchange Server 2003:** <http://support.microsoft.com/kb/314605>

Microsoft SharePoint

Overview:

ZCB supports back up of MS SharePoint versions such as SharePoint 2010, MOSS 2007 and WSS 3.0.

To configure MS Sharepoint server backups, create a new backup set and choose **Sharepoint** from the dropdown list in the **Backup What** section. ZCB backs up SharePoint data that is stored in the SQL database & application web site files, such as:

- Configuration and Admin databases
- Content and configuration data for Web Applications (Eg: C:\Program Files\Microsoft Office Servers\14.0\Data\Office Server\Applications)
- Any third-party databases that are registered with SharePoint
- Shared services databases in SharePoint
- Office Search & Help Search index files

Functionality:

- ZCB performs full & differential backups of the SharePoint data incrementally backed up based on the modification time. ZCB does not support transaction log based backup.
- Since ZCB supports VSS based backup, SharePoint backup of individual objects such as Site collection, Web site, List/Document library, Document library folder, Document library file, List item, Version is not supported. Therefore files such as the SharePoint installation directory, IIS metabase information, Website application pool directory, etc require separate backup set configuration for backup.
- ZCB currently supports only single server farm (standalone) configuration. In other words, the front-end server and the database server must reside on the same machine.

Requirements:

- The Volume Shadow Copy Service must be enabled. Although the Volume Shadow Service is enabled by default, it may have been turned off after Windows installation. Please refer to the [Requirements section](#) to know how to do this.
- Windows SharePoint Services VSS Writer service must be enabled and running. To enable and run the SharePoint writer follow the steps described in <http://msdn.microsoft.com/en-us/library/bb447591.aspx>.
- The SharePoint VSS writer depends on following VSS writers. All these VSS writers must be present and enabled on the Amanda client.
- MS SQL VSS writer should be present
- For Sharepoint 2010
 - "SPSearch4 VSS Writer" is dependent on "SharePoint Foundation Search V4" service.
 - "OSearch14 VSS Writer" is dependent on "SharePoint Server Search 14" service.
- For SharePoint 2007
 - "OSearch VSS Writer" is dependent on "Office SharePoint Server Search" service.
 - "SPSearch VSS Writer" is dependent on "Windows SharePoint Services Search" service.
- Windows SharePoint Services VSS Writer service must run under the admin app pool account, which is the Network Service account in a basic installation of Windows SharePoint Services.

Windows System State

Overview:

Windows System State refers to a collection of several key operating system elements and their files. Backing up the Windows System State is crucial for a successful disaster recovery strategy. ZCB can back up the Windows System State of all supported Windows platforms.

Functionality:

ZCB supports backup of Windows System State and performs VSS based backup of Boot files, System files, IIS, COM+ database, Registry, Active Directory and Certificate Server. Windows System State is always a full backup.

➤ For Workstations

Workstation in this context means any Windows XP machine or any Windows Vista or Windows 2003 server machine which does not have Active Directory (AD).

- Boot Files:
 - On Windows XP and Windows 2003: **SystemDrive\NTDETECT.COM**, **SystemDrive\ntldr**, **SystemDrive\boot.ini** (**SystemDrive** is usually **c:**).
 - On Vista: **SystemRoot\boot** directory (**SystemRoot** is usually **c:\windows**)
- Catalog files: **SystemRoot\System32\CatRoot**.
- MachineKeys Files: **SystemRoot\System32\Microsoft\Protect*** and **AllUsersProfile\ApplicationData\Microsoft\Crypto\RSA\MachineKeys*** where **ALLUserProfile** is **c:\Documents and Settings\All Users**.
- Performance counters: perf*.dat and perf*.bak files in **c:\windows\system32** on all OSs.
- WFP files: All dll and exe files that come under Windows File Protection (WFP). Usually the dll files reside in **c:\windows\system32**
- IIS metadata file if IIS is installed (applicable to all OSs).
- Certificate Database (Applicable to only Windows 2003 server that are Certificate Servers): files in **c:\windows\system32\certsrv**
- COM+ registration database.
- Registry: System, default, SAM, Security and Software files in **SystemRoot\system32\config** and additional Components and Schema files in Vista.

➤ For Domain Controllers

A *Domain Controller* (or DC) is any Windows 2003 machine with Active Directory installed.

- DC backups include all of the state information listed above for Workstations.
- In addition, the backups include Active Directory database, log files, and Group Policy Objects (GPOs).

Requirements:

- Please check the operating system and service pack requirements as mentioned in the [Requirements section](#).
- The Volume Shadow Copy Service must be enabled. Please refer to the [Requirements section](#).

- System state backups of a Windows Domain controller that holds the Active Directory Certificate Services role may encounter a "System state writer missing" error. Refer to this Microsoft Knowledgebase article to resolve the problem: <http://support.microsoft.com/kb/2009272>

MySQL Server

Overview:

ZCB supports logical back up MySQL Server versions 5.0 and 5.1.

To configure MySQL server backups, create a new backup set and choose **MySQL Server** from the dropdown list in the **Backup What** section. Here, please specify the MySQL server information and user credentials of the user that can perform the backup. MySQL client path refers to the directory where the MySQL client utilities compatible with your MySQL server are present. After filling in the details, click on the **Discover** button so that ZCB can connect to the MySQL server and read the databases and tables present in it.

Functionality:

- Only full backups of MySQL servers are supported currently. ZCB doesn't backup MySQL binary logs.
- ZCB supports backup of specific MySQL databases.
- ZCB supports backup of specific tables only from one MySQL database. It does not support selecting specific tables from multiple MySQL databases.
- You can either backup a local MySQL server or a remote MySQL server.

Requirements:

- The MySQL user specified in **Backup What** section should have sufficient privileges to perform logical backup from the ZCB machine. The minimal set of privileges required are:
For backup:
 LOCK TABLES, SELECT, FILE, RELOAD, SUPER, UPDATE, TRIGGER, SHOW VIEW
For restoration:
 CREATE, DROP, INDEX, SHUTDOWN, INSERT, ALTER, UPDATE, TRIGGER, SUPER, REPLICATION CLIENT, CREATE VIEW
- MySQL client utilities (**mysqldump** and **mysql**) must be installed on the ZCB machine and the MySQL client version **must be compatible** with MySQL server.

Oracle Server

Overview:

ZCB supports backup of Windows Oracle 11i.

To configure Oracle server backups, create a new backup set and choose **Oracle** from the dropdown list in the **Backup What** section.

Functionality:

- ZCB supports Full, Differential and Incremental backups of Oracle databases.
- The Oracle components that are backed up by ZCB are Oracle database, Control File, Server Parameter file, All table spaces and Archived logs. All backup files & archived logs from the Flash Recovery Area are also included in the snapshot. The online redo logs will not be included in the snapshot.
- ZCB does not support selective backup of individual databases, log files, control files, etc.

Requirements:

- The Oracle VSS Writer service must be installed for the Oracle instances that need to be backed up. The Oracle VSS Writer service must be in Started & Automatic state. In case the Oracle VSS Writer service is not installed by default, please refer to the Oracle documentation to install the service [Installing and Uninstalling the Oracle VSS Writer Service](#).
- The Volume Shadow Copy Service must be enabled. Although the Volume Shadow Service is enabled by default, it may have been turned off after Windows installation. Please refer to the [Requirements section](#).
- Oracle database in **NOARCHIVELOG** mode needs to be **Mounted** and in **Read-Only** state. The database cannot be **Open in Read Write** mode, else the backup will fail.
- Oracle database in **ARCHIVELOG** mode may be **Open in Read Write** or in **Mounted** state.

Monitoring

The **Monitor** page displays the status of backups, restores, uploads and downloads operations in progress for all backup sets. Please note that Monitor page shows only the most recent in-progress task for a backup set.

Different operations can be clicked or right-clicked to display different options. For instance, you may want to stop any ongoing task, or may want to pause an upload operation to reduce network bandwidth usage during peak office hours.

The summary of available options, for each type of operation is below.

Operation↓ Option→	Stop	Pause	Resume
Backup to Cloud	Yes	Yes	Yes
Backup to Disk	Yes	No	No

Upload to Cloud	Yes	Yes	Yes
Download	Yes	No	No
Restore	Yes	No	No

Please note that if you are resuming an upload job, ZCB will also resume any incomplete upload jobs pending for that backup set. If you wish to resume only one job, please use the **Report** page.

Reporting

The **Report** page displays a table of various historic operations performed by ZCB. This page allows following two basic functionalities:

Viewing Reports

You can click on any column heading to sort by that field.

ZCB allows you to customize your views. Please click on **Define Template** button, specify the template name and choose the columns which you want to include the template view. Click on Save Template to add this new template.

To load a specific template, you can select it from the dropdown just next to the **Define Template** button.

To export your loaded template view to a Comma Separated Values (CSV) file, please click on the **Export Report** button. This file can be used for printing, or import into other applications to create spreadsheets and charts.

Task Management

Select the task you wish to modify. Once selected, you may right-click to bring up a menu or click the icon at the top of the page that corresponds to the action you wish to perform.

Here is a summary of what actions are allowed on what type of jobs.

Job↓	Action→	Delete Backup Run Or Delete Restore Run	Delete Failed Uploads	Begin Upload
Backup to Cloud		Yes Delete Backup Run	Yes	No
Backup to Disk		Yes Delete Backup Run	No	Yes*
Upload from Disk		Yes Delete Backup Run	Yes	No
Download		Yes Delete Restore Run	No	No
Restore		Yes	No	No

* Available only if data from disk is not uploaded already

Please note that if you select multiple tasks the only action available is “Delete Backup Run” which will delete the entry from the ZCB tables.

Restore

ZCB offers a number of ways to restore file system and application backups. You can restore to the original backed up system or a different system altogether.

Overview

What is a Backup Catalog?

When ZCB backs up data, it stores some key meta-information in a special file called the backup catalog. This catalog is used by ZCB at restoration time to let the user select the desired specific data for restoration and to restore the backup data correctly.

Restore to the original machine

This is the most common case where one wishes to restore data to the same machine where it was backed up. To do this, you need to go to **Restore** page and follow the below-mentioned instructions as applicable for the type of backup data you wish to restore.

Restore to a different machine

You can also restore backup data originating from one machine to a different machine. This is mostly used to create a clone of the original system as done in a bare-metal recovery scenario. Doing this requires some additional steps before you can launch the actual restore process. The steps are:

- It is recommended that you install the same Windows Operating System (with the same service packs) on the restore machine as was installed on the original machine.
- Install ZCB on the target machine (where you wish to restore the backup data).
- Import cloud certificate as described in section above.
- Complete the process of restoring the catalogue as described in the section [Restoring the Backup Catalog](#)
- Once the backup catalog has been downloaded by ZCB successfully, you can follow the normal restoration steps as explained in the [Performing Restores](#) section as applicable for the type of backup data you wish to restore.

Windows File System

Overview: For Windows File System restores, ZCB offers a lot of finer options to allow the user to have just the right control and flexibility while restoring the data. You can restore to the original backed up system or a different system altogether.

Functionality:

To perform restore of file system data, please follow the following steps:

- In the ZCB user interface, select the backup set for which backup was taken and please navigate to the Restore page and from the table showing all the backup runs, click on the run which you want to use for restore.
- In the Restore Point dropdown, ZCB will show you all the relevant backup images for this restore operation. The restored data will be exactly same as it existed at the time stamp contained in the backup run images.
- Once you select a restore point, all the files which are available for restore will be shown.
- ZCB lets you select directories and files from a browser tree. You can use the Filter option to search specific files/folders. ZCB supports wild cards in the Filter specification. Wild cards "*" (match one or more character) and "?" (match exactly one character) are supported. You can either enter absolute path of the files to be searched. In case you do not remember the absolute path, use "*Filename*" pattern. Example, to search all files with .jpg extension, enter "*.jpg". To search all files under "C:\Windows\System32", enter "C:\Windows\System32" or "*System32*" as the search pattern.
- Now you can specify the following:

Run Script Before Restore: This optional field lets you specify an executable file (example .bat and .exe) which you want to run just before the actual restore is performed.

Run Script After Restore: This optional field lets you specify an executable file (example .bat and .exe) which you want to run just after the actual restore is performed.

Download Folder: This path refers to the location where ZCB should download the backup archives from the cloud.

Restore Folder: This optional field is required if you wish to restore the selected files and folders to an alternate location and have selected the Alternate Location radio button just below this field.

Restore to Alternate Location: If selected, this radio button directs ZCB to write restore data to a location as defined in the Restore Folder field above.

Restore to Original Location: If selected, this radio button directs ZCB to write restore data to the original location. If this is chosen, you would want to carefully choose the correct conflict resolution option in the Restore Policy dropdown just next to this field.

Restore Policy: ZCB offers 4 conflict resolution options if it encounters a file already present in the folder where restore data is being written. These options are:

Keep Existing: This will make ZCB retain the already present file and skip the restore for it.

Overwrite Existing: This will make ZCB overwrite the already present file with the version contained in the restore data.

Rename Existing: This will make ZCB rename the already present file with a timestamp suffix appended to its original name. The file contained in the restore data will be restored with its name being intact.

Rename Restored: This will make ZCB retain the already present file and the file contained in the restore data will be restored with a timestamp suffix appended to its original name.

Retain Download Archive: By default, once the restore is complete, ZCB will delete the backup archive downloaded from the cloud. If you wish to retain this archive so that you can do more restores from this backup run later, you can select this option. Please note that you will have to manually delete the downloaded archive when you no longer need it.

Requirements:

- If you are attempting to restore data to a different machine than the one which was backed up, please complete the steps described in the [Restore to a different machine](#) section above.
- For file system backups, you can restore files from a different Windows operating system to a different Windows operating system. For e.g. you can restore files from a machine running Windows XP to a target machine running Windows 7.

Microsoft SQL server

Overview: ZCB supports Simple Recovery Model, Full Recovery Model and Bulk Recovery Model for SQL server databases. You can restore to the original backed up system or a different system altogether.

Functionality:

➤ Restoration to Original location:

If selected, this radio button on the Restore page directs ZCB to write restore data to the original location. Please note that:

- ZCB performs a VSS based SQL restore.
- During restore of master database, SQL server is stopped and is restarted after restoration.

➤ Restoration to Alternate location

If selected, this radio button on the Restore page directs ZCB to write restore data to an alternate location as defined in the Restore Folder field above. Please note that:

- The database files from the backup are copied to this alternate location.
- SQL recovery is not performed and SQL services are not stopped.

Requirements:

- Please make sure that the SQL installation and database locations match with the location during backups.
- If you are attempting to restore data to a different machine than the one which was backed up, please complete the steps described in the [Restore to a different machine](#) section above.
- You must install the same Windows Operating System (with the same service packs) on the restore machine as was installed on the original machine.
- The SQL writer service must be running at the time of backup and recovery. Microsoft recommends that the SQL VSS Writer service be automatically started. MSDE writer is not sufficient for backup and recovery.
- The amandabackup user must be added as a SQL server user with sufficient privileges. To add the user in SQL server Management Studio, click on Security > Logins > Add New Login. Add the amandabackup user account and give it privileges. You can just add it to sysadmin server role.
- If you wish to restore a deleted database, please follow this procedure:
 - Restore the Master and the deleted database from the latest Full backup.
 - Once the restore is successfully completed, use the "All latest" filter on the Restore Point dropdown on the Restore page and select the deleted database from all the backup runs including the latest Full backup.
 - After the restore is successfully completed, attach the restored database using SQL Management Tool.

Microsoft Exchange Server

Overview: In the event of a server loss, how you perform the recovery will depend on the server role and your disaster recovery plan. One would also need to recover Exchange databases in case of issues such as database corruption, loss of transaction logs, accidental deletion of mailboxes, etc. Using ZCB, exchange databases can be restored to the same server or to an alternate server depending on the Disaster Recovery plan decided by the Exchange Administrator.

Functionality: Three types of recovery operations are allowed by Microsoft Exchange:

- Roll-forward,
- Point in time
- Full restore

The state of the MS Exchange server when the restore is started determines what type of recovery will be available. Please see [this Microsoft documentation](#) for details on Exchange recoveries. You can restore Exchange 2007 backups to a recovery storage group and Exchange 2010 backups to a recovery database.

☞ When the storage group is mounted, the Exchange store automatically replays any pending transactions using the Exchange Server soft recovery feature. Therefore all restores performed through the ZCB are always "roll-forward" restores.

- **Restoration to Original location:** In case of Exchange database corruption or loss of the transaction log, an Exchange Administrator would want to restore the backed up data to the original server. Ensure that all the requirements listed below are satisfied before starting the restore. The steps to restore an Exchange server data to original location are:
 - Navigate to the Restore page in the ZCB user interface. Select the backup and point in time that you want to restore.
 - Select the Mailbox Store Database or Public Folder Database & its associated Logs from the File List view.
 - Select the radio button - "Restore to Original Location." ZCB will restore the data to the same location from where the backup was made.
 - From the drop down select – “Restore Policy: Overwrite Original”. Once confirmed, click Restore to start the restore process.

- **Restoration to Alternate Exchange Server:** There are two reasons to restore to a different machine than that from which the backup was taken:
 1. A disaster has destroyed the original hardware. You must restore the database to a rebuilt Exchange Server or to an alternate Exchange server.
 2. You are recovering an individual mailbox. In this case, there are additional steps to apply the recovery to the production Exchange server (see the next section below).

The steps to restore an Exchange server data to an alternate Exchange server are:

- Navigate to the Restore page on ZCB user interface. Select the backup and point in time that you want to restore.
 - Select the Mailbox Store Database or Public Folder Database & its associated Logs from the File List view.
 - Select the radio button - "Restore to Original Location." ZCB will restore the data to the same location from where the backup was made. In case of a Recovery Exchange server, the data will be restored to the newly created Mailbox/Public Folder store.
 - From the drop down select – “Restore Policy: Overwrite Original”. Once confirmed, click Restore to start the restore process.
-
- **Restoration to Recovery Storage Group/Database:** Exchange server provides an option to restore to a Recovery Storage Group & Recovery Database respectively. Using Recovery Databases, users can restore the Mailbox store to a production Exchange server without having to dismount the Mailbox stores from where the backup was taken.

☞ Restoring to a Recovery Storage Group/Database is not supported for Exchange 2003.

The steps to restore an Exchange server data to a Recovery Storage Group/Database are:

- Navigate to the Restore page on ZCB user interface. Select the backup and point in time that you want to restore.
- Select the Mailbox Store Database & its associated Logs from the File List view.
- Select the radio button - "Restore to Recovery Database". Enter the name of the "Recovery Database". ZCB will restore the data to the location where the Recovery Database is created.
- From the drop down select – "Restore Policy: Overwrite Original". Once confirmed, click Restore to start the restore process.

➤ **How to recover a deleted mailbox or a mailbox item:** It often happens that a mailbox or mailbox items like emails/folders get accidentally deleted. Microsoft Outlook provides users a way of recovering the deleted folder items by using the [Recover Deleted Items](#) option. To recover a deleted Mailbox within the mailbox retention period, one can reconnect the user account to the deleted mailbox using the [Exchange Tasks](#).

In case none of the above recovery options work i.e. when the deleted mailbox has an expired mailbox retention period, **one is left with no other choice but to restore the Exchange server Mailbox store to a recovery server or to a recovery database. Follow the steps mentioned in the Restoration to Alternate Exchange Server or Restoration to Recovery Storage Group/Database** to restore the Mailbox store database which has the deleted mailbox. Additionally use the [Exmerge.exe](#) to extract the data from the restored Mailbox store to a .PST file as follows:

- Using the Exchange System Manager or Exchange Management Console, run the **Cleanup Agent** on the Mailboxes to display the restored mailboxes. Then **Reconnect** the mailbox from which you wish to retrieve the mails to its associated User account. For example, if you want to retrieve mails for user **Administrator**, then reconnect the **Administrator** mailbox to **Administrator** user account. Launch the Exmerge.exe. Select the **Extract or Import (Two step procedure)**.
- On the next screen, select **Step 1: Extract data from an Exchange Server Mailbox**. This will step extract the data from the desired mailbox into a .PST file.
- Copy the .PST file to the production Exchange server where the deleted mailbox originally existed.
- Run the **Exmerge.exe** utility on the production server to merge the PST mails into the required mailbox. Use the **Two step procedure**, and select **Step 2: Import data into an Exchange Server Mailbox** to import the data from the .PST file into the desired mailbox. All the deleted items should be now recovered.

Requirements:

- The databases must be in the **Dismounted** state and the **This database can be overwritten by restore** option enabled through the Exchange System Manager (Exchange 2003) or Exchange Management Console (Exchange 2007, Exchange 2010).

- Enable the Exchange Server Certificate in case it is not enabled.

```
[PS] C:\Windows\system32>get-exchangecertificate
Thumbprint      Services      Subject
-----
18DDD379D721792012001D294F342FF8380A61F1  IP.WS.      CN=Ex-2010
```

```
[PS] C:\Windows\system32>enable-exchangecertificate
cmdlet Enable-ExchangeCertificate at command pipeline position 1
Supply values for the following parameters:
Services: IIS
Thumbprint: 18DDD379D721792012001D294F342FF8380A61F1
```

- Once the Exchange server certificate is enabled, go to **Start > Run**. Type **mmc**. Add **Snap-in for Certificates > Computer Account**. Copy the certificate with **Friendly Name** as **Microsoft Exchange** from **Personal > Certificates to Trusted Root Certification Authorities**.
- If you are performing restores to a Recovery Storage Group/Database, please create an empty Recovery Storage Group/Database on the Exchange server.
- Additional steps for Exchange 2007:

- Install .NET v2.0 SP1. Install the patch for Powershell depending on the Windows OS platform from the link <http://support.microsoft.com/kb/968929>
- Add **amandabackup** user to the Exchange View-Only Administrators group. Then restart ZWCService.

- Additional steps for Exchange 2010:

- Install .NET v4.0.
- Add **amandabackup** user to **View-Only Organization Management** group using Exchange Powershell as follows:
Add-RoleGroupMember "View-Only Organization Management" - Member amandabackup

- Set **AllowUnencrypted** flag to **True** using the commands below. AllowEncrypted is defined on the client end, via the WSMAN: drive. You must be running powershell.exe (or powershell_ise.exe) as an elevated process.

```
ps> cd WSMAN:\localhost\Client
ps> dir
Name                               Value
-----
NetworkDelayms                     5000
URLPrefix                           wsman
AllowUnencrypted                    false
Auth
DefaultPorts
TrustedHosts
ps> set-item .\allowunencrypted $true
```

- Open IIS Manager. Under Exchange Computer Name > Sites > Default Web Site > PowerShell, click on Authentication. Change Basic Authentication to Enable.

Additional Requirements (for restores to an alternate Exchange Server)

- Please complete the steps described in the [Restore to a different machine](#) section above.
- The target Exchange version and service packs must be the same as the source server. For example: Exchange 2003 Server Service Pack 2 or later must be installed.
- Exchange must be installed and must have the same Organization and Administrative Group name as the source server.
- The storage groups and databases must already exist on the target server, and have the same names as the original storage groups or databases.
- Because you are restoring to an alternate "recovery server" that has a different set of log files, the signatures on the log files must match. To ensure this, either rename the **E0x.log** file located in the Transaction log directory, or enable the **Do not mount the database** option while creating a Mailbox or Public folder store.
- The Volume Shadow Copy Service must be enabled. Although the Volume Shadow Service is enabled by default, it may have been turned off after Windows installation. Please refer to the [Requirements section](#) to know how to do this.
- Run the command *vssadmin list writers* at the Windows command prompt and check that the state of the Exchange Writer is stable. If not (or if there are any VSS errors), restart the **Microsoft Exchange Information Store** Service.
- In case of Windows 2003 Small Business Server edition, the Exchange Writer is disabled by default. Please follow the instructions this MS knowledgebase article to enable the Exchange Writer: <http://support.microsoft.com/kb/838183>
- Microsoft .NET Framework 3.5 Service Pack 1 must be installed on the ZCB machine. For Exchange 2010 server running on Windows 2008 Server R2 release, .NET 4.0 is required.
- Exchange circular logging must be disabled. If circular logging is enabled, the Exchange server client will only retain the last 5 transaction logs, which may not be sufficient to restore to the most recent backup.

Microsoft SharePoint

Overview: ZCB supports Content Recovery, Web Application Recovery and Disaster Recovery for MS SharePoint. You can restore to the original backed up system or a different system altogether.

Functionality:

➤ **Content Recovery**

Content recovery applies to being prepared for accidental updates or deletions of data, usually by end users such as deleting documents, tasks, calendar items, etc. Content recovery can be done by restoring Web application's Content databases. Since, ZCB does not support Roll-

forward restore, if the restore is targeted to the original location, changes done after backup will be lost. So, one can restore the respective Web application's content databases to alternate location and use Third Party tools to extract the required object.

➤ **Web application Recovery**

A web application recovery would be required in case of accidental deletion or corruption of the content databases, etc. To recover a deleted/corrupted web application's content database to Original server, select the appropriate database files from SharePoint server backup.

- **Restoration to Original location:** ZCB performs the restore to original location in following steps:
- During pre-restore operations, the following SharePoint services are stopped:
 - Windows SharePoint Services Administration
 - Windows SharePoint Services Search
 - Windows SharePoint Services Timer
 - Office SharePoint Server Search
 - IIS Admin Service (if entire farm is being restored)
 - The selected SharePoint database/s and log file/s are restored to their original location. If all the data is selected from the Restore What page, all the databases and Index search files are restored. You can also select individual content databases to restore.
 - During the post restore phase, the ZCB calls the SharePoint VSS writer post-restore operation which automatically detaches and then reattaches each database to the farm. This synchronizes the respective databases with the SharePoint farm.
 - The services which were stopped before the restore operation are restarted.
- **Restoration to Alternate location:** When restoring to an alternate location, services are not stopped and started before and after restore. Also, the SharePoint Writer's port-restore operation is not called. The selected databases and log files are simply restored to the given location.

Requirements:

- If you are attempting to restore data to a different machine than the one which was backed up, please complete the steps described in the [Restore to a different machine](#) section above.
- The target server must have the same SharePoint server (WSS 3.0 or MOSS 2007 or Share Point 2010) with same Service Packs and SQL server (embedded SQL server or SQL server 2008 or SQL server 2005 or SQL server 2000).
- Make sure that MS SharePoint is installed in the same location as when the backup was run. The databases and log file locations should also match the original configuration.

- The Share Point Databases must be in stable state. To check the state of the SQL server, Connect to the SQL server using MS SQL Management Studio. The **Properties** from right click menu for each database will display the state. The state of the database must be **Normal**.
- Please make sure that the following services are in the **Started** state
 - Windows SharePoint Services VSS Writer
 - Volume Shadow Copy
 - Windows SharePoint Services Tracing

Windows System State

Overview: ZCB offers recovery of Windows System State on all the supported Windows platforms.

Functionality: ZCB supports backup of Windows System State and performs VSS based backup of Boot files, System files, IIS, COM+ database, Registry, Active Directory and Certificate Server. Windows System State is always a full backup.

Please note that for system state restores, ZCB will set default values which are different from those of other applications. It will set the **Restore to** option to **Original Location** and the **Restore Policy** option to **Overwrite Original**.

Requirements:

- You must install the same Windows Operating System (with the same service packs) on the restore machine as was installed on the original machine.
- If you are attempting to restore data to a different machine than the one which was backed up, please complete the steps described in the [Restore to a different machine](#) section above.
- The Volume Shadow Copy Service must be enabled. Please refer to the [Requirements section](#) to know how to do this.

MySQL Server

Overview: The Restore page for a MySQL backup set presents users with 2 views namely **Databases** and **SQL Files**. To select databases, use the **Databases** view. ZCB allows selecting individual databases but does not support selecting individual tables for restore. The **SQL Files** filter shows the *backup.sql* containing SQL commands.

Functionality: The same MySQL server information and MySQL user credentials for the backup set (as configured in the **Backup What** page) is used for restoration.

The steps to restore MySQL database or tables to the Original server are:

- Navigate to the Restore page on ZCB user interface. Select the backup run you want to restore from.
- Use the **Databases** view and select the databases to be restored.
- Click on **Restore**.

- The backup image containing SQL commands is restored to the **Restore Location** specified in Restore page.
- The **Policy** in the Restore page is applied to the files in this location (not MySQL databases/tables).
- The *mysql* client command is then used to execute the SQL commands that are in the backup image. ZCB will restore the selected databases or tables to the MySQL server from where the backup was taken from.

The steps to restore the MySQL backup file are:

- Navigate to the Restore page on ZCB user interface. Select the backup and point in time that you want to restore.
- Use the **SQL Files** view and select the backup.sql file and its folder.
- Click on **Restore**.
- When MySQL file is restored using this procedure, no MySQL recovery is performed.
- The MySQL backup image contains sequence of MySQL commands that can bring the database back to original state. Restoration of the backup.sql file allows users to edit the SQL commands and run a manual recovery as needed.

Requirements:

- The MySQL user should have necessary privileges to perform MySQL operations that the backup image contains.
- Restoration process requires MySQL client commands to be installed on ZCB machine and it must be compatible with the MySQL server version. MySQL server must be running for restoration to be successful.

Oracle Server

Overview: In the event of a server loss, how you perform the recovery will depend on the server role and your disaster recovery plan. One would also need to recover Oracle databases in case of issues such as database deletion/corruption, loss of control files, etc. Using ZCB, Oracle database can be restored to the same server or to an alternate server depending on the Disaster Recovery plan.

Functionality: There could be various scenarios when Oracle data would need to be restored. Once ZCB copies the data to the desired location, user needs to run recovery commands using **sqlplus** to get the database in consistent state. Below are some recovery scenarios where database files, control files, etc have been accidentally deleted/corrupted.

The steps to restore all Oracle datafiles (Disaster Recovery) in **ArchiveLog** to the Original location are:

- Ensure that the instance is not started.

- Navigate to the Restore page in the ZCB user interface. Select the backup run you want to restore from.
- Select the database files to be restored i.e. the datafiles, server parameter file, etc. In case the redo logs are missing, select the appropriate archived redo log files as well.
- Select the radio button - "Restore to Original Location." ZCB will restore the data to the same location from where the backup was made.
- From the drop down select – "Restore Policy: Overwrite Original". Once confirmed, click Restore to start the restore process.
- Click on **Restore**.
- Once the database is successfully restored, open the **sqlplus** and run the below commands.


```
cmd> sqlplus /nolog
sql> connect sys as sysdba
sql> shutdown immediate
sql> startup mount
sql> recover database using backup controlfile until cancel;
```

Note: In cancel-based recovery, recovery proceeds by prompting you with the suggested filenames of archived redo log files. Recovery stops when you specify CANCEL instead of a filename or when all redo has been applied to the datafiles.databases/tables).

- Continue applying redo log files until the last log has been applied to the restored datafiles, then cancel recovery by executing the following command:


```
sql> CANCEL;
```
- To finish, enter the following SQL command string


```
sql> alter database open resetlogs;
```
- To verify that the database is in the **open** state (read/write mode), use the following command:


```
sql> select name, open_mode from v$database;
```

The steps to restore a single Oracle datafile in **ArchiveLog** to the Original location are:

- Ensure that the database is either mounted or open. If the database is open, run sqlplus on Command Prompt and connect to the database.


```
cmd> sqlplus sys as sysdba
```
- To recover the datafile, the tablespace needs to be taken offline. Lets consider an example where the tablespace ZTEST01 needs to be restored.


```
sql> ALTER TABLESPACE ZTEST01 OFFLINE IMMEDIATE;
```
- Navigate to the Restore page on ZCB user interface. Select the backup run you want to restore from.
- Select the datafile to be restored i.e. ZTEST01.dbf in our example. In case the redo logs are missing, select the appropriate archived redo log files as well.
- Select the radio button - "Restore to Original Location." ZCB will restore the data to the same location from where the backup was made.

- From the drop down select – “Restore Policy: Overwrite Original”. Once confirmed, click Restore to start the restore process.
- Click on **Restore**.
- Once the database is successfully restored, open the **sqlplus** again and run the below commands.


```
cmd> sqlplus /nolog
sql> connect sys as sysdba
```
- If the restored data file is older than the redo log files, then a media recovery needs to be initiated using the below command:


```
sql> RECOVER TABLESPACE ZTEST01;
```

 You will see the below message


```
Specify log: {<RET>=suggested | filename | AUTO | CANCEL}
```
- Input the appropriate log file location. Type 'AUTO' if you want Oracle to automatically find the appropriate logs and apply it.


```
Specify log: {<RET>=suggested | filename | AUTO | CANCEL}
AUTO
Log applied.
Media recovery complete.
```
- Once you have recovered all the tablespaces that you have lost, bring the offline datafile or tablespace back online using command:


```
sql> ALTER TABLESPACE ZTEST01 ONLINE;
```

The steps to restore the server parameter file are:

- Navigate to the Restore page in the ZCB user interface. Select the backup run you want to restore from.
- Select the Server parameter file (spfile) to be restored. Usually, it is named as **SPFILE"ORACLE_SID".ORA** . For example, if the SID of the database is "ORCL", then the name of spfile will be "SPFILEORCL.ORA".
- Select the radio button - "Restore to Original Location." ZCB will restore the data to the same location from where the backup was made.
- From the drop down select – “Restore Policy: Overwrite Original”. Once confirmed, click Restore to start the restore process.
- Click on **Restore**.
- Once the restore operation is done, run sqlplus on Command Prompt


```
cmd> sqlplus sys as sysdba
```
- Shutdown the database and startup again.


```
sql> SHUTDOWN immediate
sql> STARTUP
```
- Check the database whether it's up and running


```
sql> SELECT name, open_mode from v$database;
```

The steps to restore all datafiles in **NoArchivelog** are:

- Navigate to the Restore page in the ZCB user interface. Select the backup run you want to restore from.

- Select all the datafiles & control files. ZCB backs up one of the 3 control files i.e. **CONTROL01.CTL**.
- Select the radio button - "Restore to Original Location." ZCB will restore the data to the same location from where the backup was made.
- From the drop down select – “Restore Policy: Overwrite Original”. Once confirmed, click Restore to start the restore process.
- Click on **Restore**.
- Make two extra copies of the **CONTROL01.CTL** file called **CONTROL02.CTL** and **CONTROL03.CTL**. For your information, **CONTROL01.CTL** file is located in the **ORAHOME\ORADATA\DATABASE_SID** directory.
- To run the recovery, run sqlplus on command prompt:


```
cmd> sqlplus /nolog
sql> connect sys as sysdba
sql> shutdown immediate
sql> startup nomount
sql> ALTER DATABASE mount;
sql> RECOVER DATABASE;
sql> ALTER DATABASE open;
```

The steps to restore all Control files in Archivelog are:

Note: When Oracle database control files are backed up by Volume Shadow Copy Service, the backed-up files are referred to as Snapshot Control files. For example, a control file by the name of 'CONTROL01.CTL' is backed up under the name SNCFDATABASE_SID.ORA. Let’s consider an example where the database SID is ORCL. In this case the snapshot control file will have the name SNCFORCL.ORA.

- Ensure that the database is in NOMOUNT state or can be started in NOMOUNT state by the Oracle VSS writer. You don't have to shut down the database manually.
- Navigate to the Restore page on ZCB user interface. Select the backup run you want to restore from.
- Select the snapshot Control File. In the above case, select 'SNCFORCL.ORA' since the SID of the database is ORCL.
- Select the radio button - "Restore to Original Location." ZCB will restore the data to the same location from where the backup was made.
- From the drop down select – “Restore Policy: Overwrite Original”.

Once confirmed, start the restore process.

- Click on Restore.
- SNCFDATABASE_SID.ORA file is located in the 'ORAHOME\product\db\database\' directory. Example, it would be located in the 'C:\app\Administrator\product\11.1.0\db_1\database\' directory.

Note: ZCB automatically stops the Oracle instance while restoring and then starts it again when the restore operation is finished.

- Make three copies of the SNCFDATABASE_SID.ORA called CONTROL01.CTL, CONTROL02.CTL, and CONTROL03.CTL.
- Copy these three files to the control files install location. The default location is 'ORAHOME\oradata\{DATABASE_SID}\'. For the above example, copy the files to the 'C:\app\Administrator\oradata\ORCL\' directory.
- Run sqlplus on Command Prompt Window
cmd> sqlplus sys as sysdba
- Shut down the database and startup
sql> SHUTDOWN IMMEDIATE
sql> STARTUP MOUNT
- Run the below command to get the database in consistent state.
sql> RECOVER database using backup controlfile until cancel;
- Continue applying redo log files until the last log has been applied to the restored datafiles, then cancel recovery by executing the following command:
sql> CANCEL;
- Open the database with the RESETLOGS option.
SQL> ALTER DATABASE OPEN RESETLOGS;
- The Oracle database is now recovered. To verify that the database is in the open state (read/write mode), use the following command:
SQL> select name, open_mode from v\$database;

Requirements:

- If you are attempting to restore data to a different machine than the one which was backed up, please complete the steps described in the [Restore to a different machine](#) section above.
- Please make sure that the following services are in the Started state
 - Oracle VSS Writer
 - Volume Shadow Copy

Advanced Filtering:

To filter items, users may specify patterns that include wildcards, combine them with 'and' or 'or', as well as apply negation to the whole pattern.

The syntax for the pattern expressions is as follows:

- “Or” filtering = pattern | pattern
- “And” filtering = pattern <> pattern
- “Not” filtering = :pattern
- The pattern may contain any **alphanumeric characters, path separators** (only backward slashes), **any characters that are valid in a file path name, asterisk '*'** as a wildcard for *one or more* characters, a **question mark '?'** for a *single* wildcard character, or any combination of these.

As described in the user guide, relative path can be specified using asterisks. (Example: ***dir_name*** .)

Absolute paths can be specified as follows: **C:\Users\FileServer*.txt** or **C:\Users\FileServer***.

Examples of OR:

- `*jpg|*txt|*docx` to show either jpg, txt, or docx files
- `C:\Users\FileServer*.txt|*.docx` to show txt or docx files in C:\Users\FileServer
- `*Users*|*jpg` to show all files in the Users directory or all jpg files in any directory
- `*Users*|*TestData*` to show all files either in the Users directory or the TestData directory

Examples of AND:

- `*Users*<>*jpg` to show all jpg files in the Users directory
- `*Products*<>*TestData*` to show all files that are both in the Products directory and the TestData directory

Examples of NOT:

- `:*pdf` to show all files that are not pdf
- `:*Users*` to show all files that are not in the Users directory

Disaster Recovery

Disaster recovery refers to restoring the system and data in the event of partial or complete failure of a computer because of natural or technical causes. Following sections explain how to prepare for Disaster Recovery of any application server running Microsoft SQL server, Microsoft Exchange server, Microsoft SharePoint server or any File server and then how to recover the system in case of a disaster.

Preparing for Disaster Recovery

To protect an application Server from a disaster, one should perform backups of its critical components like System State, application data like databases, application installation directories, etc. We recommend users to create backup sets for such critical components like:

- **System Drive (default: C:\)** - Exclude all system and temporary files. This is drive where the Windows operating system and all applications are installed.
- **System State** - Backup of the server's registry, boot files, COM+ database, Active Directory, etc.
- **Application data** – Application data backup like Microsoft SQL server, Microsoft Exchange server, Microsoft Sharepoint server.
- **Application installation directory** - if the application is installed on a drive other than the System drive, include the installation directory. You can exclude the Database directory since it will be backed up as a part of SQL server database backup.
- **User Data** - Backup of File server data on partitions other than the System drive.

Performing Disaster Recovery

- Install the same version of Windows server and Service Packs as the original server. Make sure that the new server has exact same drive partitions, Windows installation directory and Computer Name as the original server. Do not put the machine in any domain or Workgroup.

- Log in to the machine as an Administrator.
- Install ZCB in the same directory location as the original server.
- Since you are attempting to restore data to a different machine than the one which was backed up, please complete the steps described in the [Restoring the Backup Catalog](#) section to download the catalog of backup sets uploaded from the original server.
- Restart the ZCB UI upon a successful completion of Restore Catalog procedure.
- Activate the backup sets using **File Menu > Activate Backup Set**.
- Click on the System drive backup set. Navigate to the **Restore** page on ZCB user interface. Select the backup and point in time that you want to restore.
- Select the radio button - "**Restore to Original Location**" ZCB will restore the data to the same location from where the backup was made.
- In the drop down menu select "**Restore Policy: Overwrite Original**". Once confirmed, click **Restore** to start the restore process.
- The restore of the System drive may report errors, since it will be unable to restore the Windows system files. You can safely ignore failure for these system & open files.
- After the System drive data has been successfully restored, restore the data for **System State** backup set with similar restore settings as above.
- The next data to be restored is for the **Application installation directory & User Data** backup sets with similar restore settings as above.
- Now reboot the server.
- After the server is rebooted, go to the Windows Services and check if the application services are installed and in a running state.
- Once the application services are confirmed as running, restore the **Application data** backup set.

Administration

Changing Thread Count

Starting in version 4.0, ZCB allows users to configure the number of threads which will be used to upload/download the data to the cloud. You can tweak the values in **Preferences > Maximum thread Counts**.

Increasing the number of threads usually increases file transfer speeds, due to concurrent data transfers. However, there are limits. Increasing the thread count has diminishing returns, and beyond a point an increased thread count can actually degrade performance rather than increase it.

Note: The maximum thread count is 10.

Localization

ZCB is available in 6 languages – English, German, Japanese, Simplified-Chinese, Traditional-Chinese and Korean. However to use file/folder name containing non English characters, you need to have the Windows edition for that language. For example, if there are Japanese characters in file names to be backed up, you need to be running a Japanese edition of Windows operating system.

Email Notification

ZCB allows users to receive notifications when particular operations get completed. This control is offered both at the global level (for all backup sets) or at a backup set level.

ZCB provides notification of backup and recovery events in two different methods:

1. All events (successful and failure) are logged in the Windows event logs. Window event log analyzer tools can be used to filter the events and analyze them.
2. Email notification can be sent when a particular event occurs, such as the success or failure of a backup, upload, download, or restore operation.

To enable email notifications, you need to configure the mail server first. To do this, please click on **Preferences > Email...** and provide information for these fields:

- **From:** Please specify what mail id you would like ZCB to put in the **From** field of the emails. By default, this is ZCB-noreply@zmanda.com
- **To:** Input the email addresses to which you would like notifications to be sent. Separate multiple email addresses with a “;” (semi colon) character.
- **Outgoing SMTP Server:** This is the IP address or hostname of your outgoing SMTP server.
- **Port:** This is the SMTP server port which ZCB should connect to for sending emails.
- **Username:** This is the email address/username which is to be used for authentication with the mail server.
- **Password:** This is the password for the above email account.
- **Authenticate:** This check box is to be disabled if your SMTP server doesn't need authentication. Otherwise, please keep it enabled.
- **Secure:** If you want the communication between ZCB and SMTP server to be secured rather than clear text, select the appropriate option from the drop-down box. If you are using Exchange server, please enable **Require TLS encryption** option on the Exchange server. To configure Transport Layer Security Encryption for clients, please see Microsoft KB article <http://support.microsoft.com/kb/829721>
-

After entering correct values for above, you can test if ZCB can connect to the SMTP server by clicking on the **Test Connection** button.

Once you complete the above steps, you have successfully configured mail server. Now, you need to define email recipients list and what events you wish to be notified about. You can do this at both global and backup set levels.

Global Email Notifications

To add a global email list which can be used across all backup sets, please click on **Preferences > Email...** and provide a list of email ids. Multiple email addresses can be used if separated by a “;” (semi colon) character. If you don't want to define this global email list, you can skip this setting.

Once you add this list and have a working mail server configuration, by default ZCB starts sending notification of all success/failure events to this global email list. If you wish to modify this behavior at the backup set level, please refer to the [Backup-set Specific Email Notifications](#) section below.

Backup-set Specific Email Notifications

You can also control the email notification behavior at the backup set level and define what events and email-ids are used for notification by ZCB.

To do this, select the backup set from the left hand pane and go to **Backup** page. In the **Backup When** section, under the **Backup Set Preferences** tab, you can provide the value of following fields:

Email Addresses: In this option field, you can specify email addresses which are specific to this backup set. Like before, multiple email addresses must be separated by a “;” (semi colon) character.

Also notify recipients specified in email preferences: By default, this check box is enabled which means that ZCB includes the global email list (as defined in the [Global Email Notifications](#) section above) in the notification emails generated by it. You can disable this checkbox, which will make ZCB send emails to only the email addresses defined in the **Notify** field above.

Event types: You can enable or disable checkboxes defining each event type for which you want to generate email notifications.

An example email reporting Upload success for backup set **BackupSetSystemState**.

Demo :

subject:[ZCB:demo2] Upload Report

Upload of backup set "BackupSetSystemState" is successful.

Upload start time : 2009/11/09 16:28:00

Upload end time : 2009/11/09 16:48:14

Upload Rate : 1448 Kbps

Bytes uploaded : 214.58 MB

Error Details: No upload error

HTTP Proxy Server

ZCB supports connecting to internet via a HTTP proxy server. For setup, please go to **Preference > HTTP Proxy Server**. Here you can specify your proxy server's hostname in **Proxy Host** field and the proxy server's port number in **Proxy Port** field. Please note that HTTP version 1.1 should be supported by the proxy server for ZCB uploads to work.

If ZCB can't connect to the internet using this HTTP proxy server then the uploads will fail with Storage Cloud Communication error.

Upgrading ZCB

To check if there is a new ZCB version available, please go to **Help > Check for Updates**. You will be taken to the ZCB release page on Zmanda Network. From there, you will be able to download the new version, if available.

Reinstalling ZCB

If for some reason, you wish to reinstall ZCB on the same machine, you can do so by following these steps:

1. Click on **Windows Start > All Programs > Zmanda > Zmanda Cloud Backup > Uninstall** on the ZCB machine to launch the uninstaller.
2. If you wish to retain ZCB configuration and backup data on your machine, choose **Yes** when the uninstaller asks you this question.
3. In case you encounter uninstallation issues and wish to clean the ZCB state completely, follow the steps mentioned in the section below.
4. Run the ZCB installer again and complete the installation.

Cleaning up ZCB installation

If you are trying to uninstall ZCB and facing trouble, then please follow the following steps to clean up:

1. Locate the ZCB installer (.exe) which you downloaded from Zmanda Network.
2. Please right click on the installer and extract it as a zip archive using an archiving tool such as 7zip.
3. After extracting, open Windows command prompt and change to the extracted directory. Now, run one of these commands (require "Administrator" privileges)

```
ZCBInstallCleanUp.exe (If you wish to preserve ZCB data)
```

```
ZCBInstallCleanUp.exe -D (If you wish to force delete the full ZCB installation)
```

Google Cloud Storage

Checking the Cloud Connection and Subscription

To verify that Google Cloud Storage is available, choose **Cloud > Check Cloud Connection**. This causes ZCB to connect to Google Cloud Storage and validate the purchased Google Cloud Storage certificate. You can use this test to validate your installation, or to troubleshoot failed uploads/downloads.

Managing Amazon S3 Storage

This heading applies to ZCB with Amazon S3 Storage *only*.

Choose **Cloud > Purchase Cloud Subscription** or **Cloud > Manage Cloud Subscription** to open a browser window that connects you to Zmanda Network and the Amazon S3 portal, where you can login to see

the storage you have purchased, and purchase additional storage if desired. Zmanda Network account information and Amazon account information is required to access the information.

To display a report that shows what you are spending on the cloud storage, click **Cloud->Cloud Billing**. This takes the user to the web site that provides detailed billing information for the current month as well as the prior month. Google account information is required.

Managing Google Cloud Storage

This heading applies to ZCB with Google Cloud Storage only.

Each ZCB with Google Cloud Storage account has a limit, chosen at purchase, on the amount of data that can be stored in the cloud.

View an account's current usage by clicking **Cloud > Check Usage**.

Purchase more storage by clicking **Cloud > Buy More Storage**.

Importing Cloud certificate

After purchasing a subscription, the ZCB certificate will be available in your Zmanda Network account. Download the certificate from Zmanda Network to the ZCB machine. The ZCB certificate should be named *cloud.zmanda* and must be imported into the ZCB User interface using the **Cloud > Import Cloud Certificate** menu option.

There can be only one Cloud certificate installed for a ZCB installation.

Restoring the Backup Catalog

To restore data to a machine that was never backed up by ZCB (as in a "bare metal" recovery) requires that your first recover the backup catalog. First import the ZCB certificate as mentioned in the [Importing the certificate](#) section above. Now, to start the restoration of catalog, navigate to **Tools > Restore Catalog** where you can provide the values for the following:

- **Host Name:** This refers to the host name of the original machine, without the domain name if any. For instance, if your original machine's host name was *myexchangeserver.xyz.com*, please provide the host name as "*myexchangeserver*".
 - If you don't remember the original machine host name, then you can put the wild card * in this field. This will download catalog for all the machines which were backed up using ZCB.
 - If you are performing catalog restore on the same machine as the original machine (and the hostname hasn't been changed) then you can keep this field blank. ZCB will identify the hostname of the local machine and will download the catalog for that hostname.
- **Backup Set Name:** This refers to the name of the backup set on the original machine when the backup was taken. If you wish to restore catalog for all backup sets (potentially matching

the above provided **Host Name** condition), you can keep this field blank. You can also use the wild card * to select matching backup set names. For e.g. exchange* will match all the backup set names such as exchangebackup, exchangeone, etc. Please note that the backup set name field is case sensitive.

- **Restore Location:** If you wish, you can provide a temporary location on the local machine where restore catalog will be created by ZCB.

Cloud Locations: Google has multiple data centers across the globe. The default option selected for Cloud Location is 'All Locations'. This means that ZCB will restore the backup catalog for all your backup sets from all regions where data was uploaded. If you have too many backup machines and backup data, this operation may take very long time. You can make it faster if you are looking to restore a specific backup set and you know the location to which that backup set data was uploaded. You can choose the region of that backup set in the Cloud Location drop down and ZCB will download the backup catalog from only that location. This will make ZCB download the backup catalog. After this, you can browse backup sets, backup reports and perform data recovery.

☞ Please note that if there is no backup data available on the cloud (after expiry of retention period or otherwise), you will not be able to recover either backup data or backup set configuration using this procedure.

Moving local backup data to a different location on the same machine

If you have been using ZCB to keep backup data on your local disk and now wish to move this old data to a new location on your machine (a different drive for instance), you can do so. For this, you will have to use the **movebackup** option of **zwcontroller.exe** program which ships with ZCB.

The syntax for this command is:

```
<Installation Folder\bin>zwcontroller.exe movebackup <BackupSet>  
<BackupFolder>
```

Here,

- **Installation Folder** refers to the location where ZCB has been installed. By default, this location is **C:\Program Files\Zmanda\Zmanda Cloud Backup**.
- **BackupSet** refers to the string – “ComputerName+BackupSetName”. So for instance if the backup set is MyDocuments and the computer name where ZCB is installed is zmandazcb.xyz.com, then the BackupSet string will be “zmandazcb+MyDocuments”.
- **BackupFolder** refers to the complete path of the destination folder where the backup files are desired to be moved.

For example, let’s assume that you have installed ZCB at the default location on a machine named “zmandazcb”. To move backup data belonging to backup set “MyDocuments” to a new location “D:\ZCB-Backups”, the command would be:

```
C:\Program Files\Zmanda\Zmanda Cloud Backup\bin>ZWController.exe movebackup  
"zmandazcb+MyDocuments" "D:\ZCB-Backups"
```

Please note the following for this operation:

- If there is any ongoing backup or upload operation for the backup set, the command will fail.
- You might also want ZCB to write new backup data to the new disk location. To do this, please change the **Location** field accordingly under the **Local Storage** heading in the **Backup Where** section.

Changing TCP Ports for use by ZCB

ZCB uses TCP ports 10080 and 10081 for backups and restoration. If these ports are not available at the time of installation, next available ports are selected.

ZCB also has the provision of changing the ports by using **Preferences > Ports**. One can specify the "Backup" and "Restore" ports and click on Save. ZCB services are restarted to apply these port changes.

Changing Log Level

Log files created by the ZCB program are stored in the **\Debug** directory installed along with ZCB (Typically **C:\Program Files\Zmanda\Zmanda Cloud Backup\Debug**). **LogFile.txt** is the ZCB engine log file. **ZIBLogFile.txt** is the log file for the ZCB program itself.

Log files for the installation and uninstallation process can be found in "%temp%" folder which is typically at "**C:\Documents and Settings\<Logged_in_user>\Local Settings\Temp**" for most systems. If not, it resides in the Windows Installation drive (D:, E: ...) under the same directory structure.

ZCB installer creates a file named "ZCBInstallLog.log" as system-log of the installation process in the %temp% folder

You can customize the amount of log messages ZCB generates. Generally, you would like to increase log level when you want to troubleshoot an issue or just before opening a support case.

To change the log level, please go to **Help > Change Log Level** and choose one of **Error, Warning and Debug**. The value **Debug** makes the logging most verbose and value **Error** makes it the least verbose.

Collect Logs

If you run into a problem that requires assistance, navigate to **Help > Collect Logs** before contacting the Zmanda Support Team. This makes ZCB collect all the relevant files into an archive, displaying its name and location. Please be patient as collecting the logs can take a few minutes and attach the log file to your support request. Please note that

- Collect Logs has to be run as a user with Administrator privileges. If ZCB UI is being run as a user who is not an Administrator on Vista, Windows 7 or Windows 2008 server, a user credentials dialog is popped up asking to enter Administrator or any other user name with Administrator privileges and password.

- In Windows XP and 2003 server, if ZCB UI is being run as a user who is not an Administrator, Collect logs will not work. You will have right click on the ZCB support short-cut and use **Run as** option and enter Administrator credentials.

Trouble Shooting

Installation errors

If you see this error - "User SYSTEM has previously installed an installation for product Microsoft Visual C++ 2008 Express Edition with SP1 -ENU. That user will need to run that installation again before using that product. Your current installation will now continue", it means that you would need to install Visual C++ redistributable library. Please right click the installer and extract it as a zip archive using an archiving tool such as 7zip. After extracting, go to the vcredit_x86 or vcredit_64 folder and run the exe program contained in it. This will allow you to install this library. After installing, please rerun the ZCB installer.

If the problem is not resolved, you can collect ZCB log files and send them to us. The default location of the installer and uninstaller logs is **C:\Program Files\Zmanda\Zmanda Cloud Backup\Debug**.

Uninstallation hangs

If you find that the uninstallation is hung, please check that:

- The ZCB user interface is not open by opening Windows Task Manager and checking if there is any javaw.exe process running.
- No scheduled backups are running. For this, check if any of the ZCB processes - ZWCController.exe or AMZS3Controller.exe - are running.
- None of the ZCB's processes, such as mysqld, etc. are being accessed by some other non-ZCB programs.

If the problem is not resolved, you can collect ZCB log files and send them to us. The default location of the installer and uninstaller logs is **C:\Program Files\Zmanda\Zmanda Cloud Backup\Debug**.

Error: "Run application using Administrator" while performing backup to cloud

On Windows 7, the "backup to cloud" operation, which backs up data directly to cloud, requires administrator privileges. If a non-administrator user launches ZCB & a "backup to cloud" operation is run, then the operation fails with error "Run application using Administrator".

To fix this issue, you can do one of these two things:

- Launch ZCB user interface as the administrator user.

- Schedule the “backup to cloud” operation rather than running it manually. The ZCB scheduled tasks run in the context of “system” user and hence this permission problem doesn’t affect them.

Error: “Failed to write registry. Verify that Remote Registry service is running.”

During installation, ZCB installer writes to the Windows registry. If the Remote Registry Service is not running, the installer will fail with this error message and installation will be rolled back. To resolve this issue, start the **Remote Registry Service** on ZCB machine before installation and run the installer again.

Error: “Backup failed”

This error appears when the backup failed for any of a number of reasons, such as snapshot failure or running out of physical volume extents. Before contacting the Zmanda Support Team, choose **Collect Logs** from the ZCB **Help** menu. ZCB then collects all the relevant files into an archive, displaying its name and location. Be patient; collecting the logs can take a few minutes. Attach the log file to your support request. Zmanda Support may ask you to set the log level to **Debug (Help->Log level->Debug)** when helping you troubleshoot.

Error: Application backup already in progress

ZCB uses VSS snapshots to backup live application. To maintain data consistency, ZCB doesn’t allow concurrent backups of two applications such as SQL Server and Exchange. Please note that this limitation doesn’t prevent you from doing backup of one application while upload of another application is in progress after being backed up to local disk.

To resolve this error, please make sure that two application backups don’t get executed in the same time duration.

Error: Mismatch in backup set configuration. Please contact Zmanda Support

This error comes up when the backup set configuration is not saved or if the directory structure of selected files/folders being backed up has changed since the time backup set was first created.

To resolve this error, please click on the Refresh button in the Backup What section and then click on the “Save *backup set*” button in the Backup page. If you still see issue, please contact Zmanda Support.

Error: Backup root directory not found

This error indicates either of the following:

- An invalid/non-existent Backup Folder has been specified in the backup set.
- ZCB lacks the necessary permissions on the directory.

Note: The Backup Folder refers to the directory path specified for the backup set in the **Backup Where** tab. Make sure that Backup Folders are present and accessible to ZCB.

Error: Backup Set directory not found OR

Error: Backup root directory not found

This error indicates either of the following:

- An invalid/non-existent **Backup Folder** has been specified in the backup set.
- ZCB lacks necessary permissions on the directory.

Note: The Backup Folder refers to the directory path specified for the backup set in the **Backup Where** tab. Make sure that Backup Folders are present and accessible to ZCB.

Error: Cannot parse this index file

This error indicates either of the following:

- An invalid/non-existent Backup Folder has been specified in the backup set.
- ZCB lacks necessary permissions on the directory. (Backup Folder)

Note: The Backup Folder refers to the directory path specified for the backup set in the **Backup Where** tab. Make sure that Backup Folders are present and accessible to ZCB.

Error: Cannot open index file

This error indicates either of the following:

- An invalid/non-existent Backup Folder has been specified in the backup set.
- ZCB lacks necessary permissions on the directory.

Note: The Backup Folder refers to the directory path specified for the backup set in the **Backup Where** tab. Make sure that Backup Folders are present and accessible to ZCB.

Error: “Access denied” while performing backups

This means the ZCB was not able to read/write the backup data due to insufficient access privileges.

Please note that ZCB performs backup with the privileges of amandabackup user and hence please provide necessary privileges to it. For application backups, please refer to the **Requirements** section for that application in this user guide.

However, if amandabackup user can't be given required permissions for some reason then you make ZCB perform the backup using permissions of a different Windows user. To do this, please refer to the [User Credentials](#) section.

Error: Restore failed

There can be many reasons for a restore to fail. Before contacting the Zmanda Support Team, choose **Collect Logs** from the ZCB **Help** menu. ZCB then collects all the relevant files into an archive, displaying its name and location. Be patient; collecting the logs can take a few minutes. Attach the log file to your support request.

Error: Restore Catalog command failed. Please look in the log file for more details.

The restore catalog command failed for any of a number of reasons, perhaps due to S3 connection problems or insufficient space on the local folder. Check the logs for further information.

Error: Unable to create backup set Backup_set_name

Check that the local disk has not run out of space.

Error: Backup Set with name Backup_set_name already exists.

Duplicate backup set names are not allowed. Please choose a different name.

Error: Unable to create temp file

Make sure that ZCB has permission to write to `ZCB_installation_directory\misc`.

Error: Unable to save Backup Where parameters for backup set

Make sure that ZCB has permission to write to `ZCB_installation_directory\conf\Hostname+Backup_set_name`.

Error: Failed to save Backup What parameters for backup set

Make sure that ZCB has permission to write to `ZCB_installation_directory\conf\Hostname+Backup_set_name`.

Error: The format of the restore time not correct.

Restore time must be specified in HH:MM format.

Error: Collection of ZCB logs failed.

On Windows Vista, Windows 7 and 2008 Server, the Help->Collect Logs can have errors if they are not run as *Administrator* user. To resolve this issue, right click on **ZCB Support** in **Start->Programs** menu and click on **Run as Administrator**.

Error: Failed to Validate encryption certificate : <CertificateName>

The encryption certificate name entered in ZCB UI **Backup What** for the backup set is invalid. Encryption certificate name must have been imported into the *amandabackup* user profile on the ZCB machine.

Error: Decryption initialization failed while finding certificate : <CertificateName>

The encryption certificate **CertificateName** used at the backup time must be available for restoration of encrypted backup images. It should have been imported into the *amandabackup* user profile on the ZCB machine where restoration is being done.

Error: Decryption initialization failed while importing session key.

You might encounter this error, if you are restoring on a machine different from where the archive, or if the *amandabackup* user profile on the same machine was deleted manually or as part of uninstallation or the password for **amandabackup** user has changed. This is a result of not importing the encryption key container used during encryption. To resolve this, you will have to import the necessary key container from the machine where the archive was backup encrypted. See **Getting Started (Help → Getting Started** in the UI or Zmanda Network documentation) guide for information on how to import key containers. Note: If you are using encrypted backups, Please make sure the **amandabackup** user password remains the same for the backup and recovery process.

Error: Failed to initialize COM for VSS OR

Error: Failed to initialize VSS OR

Error: Failed to collect writers information OR

Error: Backup failed for more than 100 or 50% of the selected files. Check Volume Shadow Copy services OR

Error: Writers status is not stable. Try after restarting Volume Shadow Copy service. Please run 'vssadmin list writers' to identify the problem vss writer.

These error messages related to VSS (Volume Shadow Services) may be seen during backup or validation of backup set. The application event logs should be checked for errors. Based on error codes in the logs, corrective action should be performed. The Windows command “*vssadmin list writers*” can also be useful to identify VSS writer problems. Restarting Volume Shadow Copy service fixes most VSS writer problems.

If this problem persists, check if all service packs for Microsoft Windows have been installed. If seen for SQL Server backups, check:

- If you have added a SQL server database to the machine and attempting a differential backup, then make sure you have taken a successful full backup first.
- When you add SQL server database, you should perform a full backup. Restart the failed VSS writers and Volume Shadow Copy service.

For debugging partial file system backups, you could check the *BackupErrors.txt* file in the ZCB Debug folder. This file contains the list of files that were not backed up in the last backup run. A similar debug file is available for restore failures (*RestoreErrors.txt* in the ZCB Debug folder). Some errors found in this log file can be safely ignored.

Error: Cloud Certificate not found in the installation directory. Backups and Restores to the cloud will not work. Please purchase a subscription or download the certificate from Zmanda Network.

Backing up to and restoring from Google Cloud Storage requires an authentication certificate. This certificate is available as part of product subscription. Please use **Cloud->Purchase Cloud Subscription** to purchase a subscription. If you are already a product subscriber, download the certificate from Zmanda Network account and import the certificate into ZCB using **Cloud->Import Cloud Certificate**.

Error: Time-mismatch: Difference between Google Cloud Storage time and System time is too large. Please check your server date and time.

Google Cloud Storage requires the system time of ZCB machine to be correct. Please synchronize the system time with valid time (NTP) server.

Error: Invalid User token: The provided token is malformed or otherwise invalid. OR

Error: Failed to connect to Google Cloud Storage due to invalid certificate OR

Error: Invalid access key: The AWS Access Key Id you provided does not exist in our records. OR

Error: Invalid Secret key: The request signature we calculated does not match the signature you provided. Check your key and signing method.

The cloud certificate installed on the machine is not valid. Please download the certificate from Zmanda Network and import the certificate to ZCB. Check your subscription using **Cloud->Cloud Billing**.

Error: Storage cloud communication errors

Communication with the cloud failed. Detailed error message is available in the log files. Use **Cloud->Check Cloud Connection** to verify connectivity to the cloud. If the connection is good, try resuming the upload operation will work. Failed uploads can be resumed from Reports page. Select the backup job report and right click to perform retry upload operation. The failed upload resumes from the failed block (not from the beginning of the backup image).

Check to see if you have configured HTTP proxy information on the **Preferences->HTTP Proxy Server** correctly.

Error: mysqldump: Got error: 2003: Can't connect to MySQL server on <IP address/name> (10061) when trying to connect

Backup of MySQL database fails with this error message. Check to see if the MySQL server is running on the server with the IP address or name mentioned in the message. Backup of MySQL database requires MySQL server to be running.

Error: Cannot run program "mysql": Create process error=2, The system cannot find the file specified.

Please check MySQL Utilities Path is specified correctly in the Backup What page in the UI. The value should be path where MySQL client utilities are installed.

Error: Upload failed due to backup run failure

This message appears in Upload pane of Monitor page. Failed backups cannot be uploaded. Look at Backup pane in the Monitor page for backup errors.

Error: You have launched 'Collect Logs' using <user name> user. The tool will fail to collect logs correctly for any user other than Administrator. Please run 'Windows Start > All Programs > Zmanda > Zmanda Cloud Backup > ZCB Support' using 'Run as Administrator' option

ZCB log collection for Zmanda Support must be performed as the Administrator user.

Error: Validation of backup set <backup set name> failed. Check if ZCB service ports (see Preferences > Ports) are used by another software using netstat command OR

Error: ZWC service could not be started. Please check if ZCB ports (Preferences > Ports) are in use

ZCB uses two TCP ports for its operations. Default port numbers are 10080 and 10081. If these ports are used by some other software installed on the ZCB machine, the above error message is displayed. Users can change ZCB ports from the UI using **Preferences> Ports** Options. Use netstat command from the Windows command shell to determine the list of ports used by software applications running on the machine.

Error: Could not open file

ZCB does not have the necessary read/write permission on the Backup Folder. Ensure that ZCB has write permissions on the Backup Folder.

Error: Nothing to do

This message indicates you are trying to restore an unsuccessful backup.

Error: Backup root directory not specified, Assigning default value

This error indicates either of the following:

- An invalid/non-existent Backup Folder has been specified in the backup set.
- ZCB lacks necessary permissions on the directory.

Note: The Backup Folder refers to the directory path specified for the backup set in the **Backup Where** page. Make sure that Backup Folders are present and accessible to ZCB.

Error: Backup info fields not specified

This error indicates either of the following:

- An invalid/non-existent Backup Folder has been specified in the backup set.
- ZCB lacks necessary permissions on the directory.

Note: The Backup Folder refers to the directory path specified for the backup set in the **Backup Where** page. Make sure that Backup Folders are present and accessible to ZCB.

Error: Restoring from a backup which was not successful

This message indicates you are trying to restore an unsuccessful backup.

Error: Backup status is not available in the index file

This message indicates you are trying to restore an unsuccessful backup.

Error: Restoring from this may not be successful

This message indicates you are trying to restore an unsuccessful backup.

Error: Unable to access following File(s)/Folder(s) that are part of the <backup set name> backup configuration:

This warning message appears if some files that were part of backup set are no longer in the system. The message identifies the list of files that are missing. Users are expecting to save the backup set so that the missing files are removed from the backup set.

Error: Please perform a Full Backup before a Differential/Incremental backup

At least one full backup must be performed for a backup set before incremental or differential backup can be performed. Incremental/Differential backup contains changes since the full backup of the backup set.

Error: Cannot run an incremental backup after a differential backup OR

Error: Cannot run a differential backup after an incremental backup OR

Error: Cannot add a differential backup schedule as an incremental backup schedule is already present OR

Error: Cannot add an incremental backup schedule as a differential backup schedule is already present

Users cannot switch from incremental to differential backup (level 1) and vice versa for a backup set. A backup set can have full and differential backup or full and incremental backups.

Error: Validation of backup set not done. Another operation already in progress

Validation of a backup set cannot be performed when backup or restore operation in the backup set is in progress. The backup set configuration is saved. The backup set should be validated later using **File>Validate Backup Set**.

Error: Restore could not proceed as no VSS writer information is available

During restoration of Exchange or SQL server, the corresponding VSS writer is not running. For MS Exchange, please check **Microsoft Exchange Information Store** service and restart it. Restart the **SQL VSS Writer** service in case of SQL server.

Error: Restore failed as restoring Exchange 2003 data to recovery storage group is not supported

Exchange 2003 backups cannot be restored to recovery storage group. This feature is not supported. Exchange 2007 can be restored to recovery storage group and Exchange 2010 can be restored to recovery database.

Error: Restore could not proceed as VSS initialization failed

- During restore process, Volume Shadow Services is used. The status of VSS writers should be stable. Please check the output of command *vssadmin list writers* and restart failed VSS writers before attempting restoration again.
- This error message can occur during Exchange restoration. Check for errors in the Application Event Logs from **MSExchangeIS**. For example: If mailbox stores in a storage group are not dismounted during a restore, the application event logs has message *Restore not permitted because storage group <storage group name> is online.*
- This error can also be seen if the user has not selected “This database can be overwritten by restore” option in the Mailbox Store properties on the Exchange server. The Event log also shows error. An example event log error message “Exchange VSS Writer failed restoring a backup because the database 'MailboxDatabase.edb' in 'C:\Program Files\Microsoft\Exchange Server\Mailbox\FirstStorage Group' of storage group 'First Storage Group' is targeted for restore, but it has not been marked for overwrite”

Error: Failed to connect to SQLServer. Please ensure that you have added windows/domain user "amandabackup" with sysadmin privileges to SQLServer and have enabled TCP/IP networking on that server.

OR

Error: MSSQL Log backup failed

SQL server backup requires **amandabackup** SQL user with correct credentials for performing backup and recovery. This message implies the user does not have appropriate credentials. Please see requirements listed in the [MS SQL server](#) section. Fix the credentials and [validate the backup set](#) before running backups. Please note SQL server validation will not check to see if amandabackup SQL user has **sysadmin** server role and must be in **SQL security** group.

Error: MSSQL Differential backup failed

Differential backup of MS SQL server failed. This can happen if SQL VSS writer has failed. Check *vssadmin list writers* command output.

Error: Query for database recovery model failed. Check logs for more details.

During backup, ZCB queries the MS SQL databases for their recovery model. This error message occurs when the query fails. Please report this error to Zmanda Support Team with the logs (Help->Collect Logs) for analysis.

Error: Specified backup component name is not valid.

During backup, ZCB queries the SQL Writer for the databases saved in the selection list. This error message occurs when one or more databases saved in the selection list goes offline. If the database has been marked offline on purpose by the SQL Administrator, then click on the Refresh button on the Backup page for ZCB to re-scan for the online databases and save the backup set.

Error: The requested application does not seem to be installed on the machine.

This error message occurs during validation of a backup set that contains SQL server or Exchange server. It means the SQL server or Exchange is not installed on the ZCB machine or could not be contacted.

Error: Recovery Storage Group/Database not found

This error occurs during restoration to recovery storage group in Exchange 2007. This error can occur for following reasons:

1. If the recovery storage group name specified in **Restore Where** does not match Exchange configuration, this message is displayed. Please provide the correct storage group name.
2. The **amandabackup** user has not been added to the **Exchange View-Only Administrators** group. Add **amandabackup** user to **Exchange View-Only Administrators** group and restart the ZWCService to resolve the error.

Error: Restoring to Recovery Storage Group/Database is not supported for backups taken by previous client version

You cannot restore Exchange backups taken by ZCB version earlier than 3.0 to recovery storage groups/recovery databases.

Error: Failed to create backup directory

OR

Error: Failed to create restore directory

OR

Error: Failed to create download directory

This error signifies permissions issue. If you are getting this error while doing manual backups or restores, please ensure that the user which has launched the ZCB user interface has the read/write permissions on the backup media, restore directory and download directory.

If you are getting this error while running scheduled backups of a mapped drive, this error comes up as ZCB scheduled backups run as SYSTEM user which will not have necessary privileges to access mapped drive. To resolve this, specify the user credentials of a user with read/write permissions on the network mapped drive (e.g. "amandabackup" user) in the **Backup Set Preferences** tab under the Backup When section. This will cause the schedules to run with the privileges of this specified user and hence will fix this issue.

Error: Application <pre|post> <restore|backup> script failed. Check ZWCService logs for more details

The pre or post backup or restore script that is configured for the backup set failed. The ZWCService log file in the Debug sub-folder of the ZCB installation directory has more details about the failure. Any non-zero (or special status of 65531) exit status from the script is considered as a failure.

Error: Application skipped the backup. Check ZWCService log file for more information.

The pre backup script returned exit status of 65331. This special exit code allows pre-backup script to skip a backup run. The same exit status from pre restore script cause restore to be skipped. The backup and restore operation is treated as successful.