

Microsoft Dynamics™ NAV 5.00

Making Database Backups in Microsoft Dynamics™ NAV



MAKING DATABASE BACKUPS IN MICROSOFT DYNAMICS™ NAV

Information in this document, including URL and other Internet Web site references, is subject to change without notice. Unless otherwise noted, the companies, organizations, products, domain names, e-mail addresses, logos, people, places, and events depicted in examples herein are fictitious. No association with any real company, organization, product, domain name, e-mail address, logo, person, place, or event is intended or should be inferred. Complying with all applicable copyright laws is the responsibility of the user. Without limiting the rights under copyright, no part of this document may be reproduced, stored in or introduced into a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), or for any purpose, without the express written permission of Microsoft Corporation.

Microsoft may have patents, patent applications, trademarks, copyrights, or other intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from Microsoft, the furnishing of this document does not give you any license to these patents, trademarks, copyrights, or other intellectual property.

© 2007 Microsoft Corporation. All rights reserved.

Microsoft, MS-DOS, Windows, Windows Server, Windows Vista, Application Server for Microsoft Dynamics NAV, AssistButton, C/AL, C/Front, C/Side, FlowField, FlowFilter, C/Side Database Server for Microsoft Dynamics NAV, Microsoft Business Solutions–Navision, Microsoft Dynamics NAV, Microsoft Dynamics NAV Debugger, Navision, NAV ODBC, SIFT, SIFTWARE, SQL Server, SumIndex, SumIndexField are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

All other trademarks are property of their respective owners.

PREFACE

This booklet contains guidelines and instructions for making database backups in Microsoft Dynamics™ NAV. The information covers both the C/SIDE Database Server for Microsoft Dynamics NAV C/SIDE Client and SQL Server Option for Microsoft Dynamics NAV C/SIDE Client. You can read how to make a backup with Dynamics NAV's own client-based backup program and about Microsoft SQL Server's backup facilities as well as our recommendations regarding backups.

All of the information in this booklet has been taken from the *Installation & System Management* manuals for C/SIDE Database Server and the SQL Server Option. For more information about testing the database, HotCopy – Dynamics NAV's server-based backup program and any of the topics mentioned in this booklet, see the relevant *Installation & System Management* manual.

You should also be familiar with the symbols and typographical conventions used in the manuals. In the list below, you can see how various elements of the program are distinguished by special typefaces and symbols:

Appearance	Element
CTRL	Keys on the keyboard. They are written in small capitals.
Address	Field names. They appear in bold and start with a capital letter.
<i>Department</i>	Names of windows, boxes and tabs. They appear in bold italics and start with a capital letter.
<i>Hansen</i>	Text that you must enter, for example: "...enter Yes in this field." It is written in italics.
fin.flf	File names. They are written with the Courier font and lowercase letters.
↑ ↓ ▼ *► ...	The special symbols that can be seen in the windows on the screen.

TABLE OF CONTENTS

Chapter 1 Making Backups	1
Why, When and How to Make Backups	2
Making Backups on C/SIDE Database Server	4
Testing before Using Other Backup Methods	7
Restoring Dynamics NAV Backups	8
Server Based Backup on the C/SIDE Database Server for Microsoft Dynamics NAV	10
Making Backups in the SQL Server Option	16
Advanced Backup and Restore Information	20
Service Packs and Security Updates	23

Chapter 1

Making Backups

This chapter contains guidelines for how, when and why to back up your Microsoft Dynamics NAV data. It describes various methods of making backups and the advantages and disadvantages of the various storage media.

The chapter contains the following sections:

- Why, When and How to Make Backups
- Making Backups on C/SIDE Database Server
- Testing before Using Other Backup Methods
- Restoring Dynamics NAV Backups
- Making Backups in the SQL Server Option
- Advanced Backup and Restore Information
- Service Packs and Security Updates

1.1 Why, When and How to Make Backups

You make backups so that there is always an extra copy of your company data to restore into the application if a problem should arise with the working copy. You should make backups for your own sake, but in most countries it is also a legal requirement.

This means that if you upgrade to a new version of Dynamics NAV or change the installation in another way, you must still keep at least one copy of your company data in a readable format (and in a safe place).

If you upgrade to a new version of the accounting system, for example, from Navision (the old text-based version) to Microsoft Dynamics™ NAV, it may be necessary to save the old system in order to be able to access the old information. You do not need to have the old system installed – you can just save it and install it if you need to.

Determining When to Make Backups

Determining a procedure for creating backups is a vital part of maintaining your database. If you make frequent entries in your database, you will need a backup procedure that guarantees the reliability of your data and will allow you to fully recover your data after any failures that may occur.

We also recommend that you always make a backup before:

- expanding the database.
- deleting a database. (You cannot retrieve it after it has been deleted unless you have saved a backup.)
- installing or removing equipment from the computer or computers on which the Dynamics NAV database is stored.
- performing data compression (both server options) and optimizing tables (C/SIDE Database Server only). For more information about these topics, see chapter 3 of the *Installation & System Management* manual for the server option that you are using.
- copying the database or parts of it with an operating system command.
- using programs to optimize your hard disk.

It is always a good idea to have an up-to-date copy of your company data in a secure place (a bank box, for example) in case of fire, theft, computer viruses, and so on.

Procedures for Making Backups

There is no formula for how often you should make backups, but remember that if you restore a backup that is a week old, you will have to reenter all the information for the past week. A backup is no more secure than the original data, so you must also protect yourself against errors in the backups. One way to do this is to create a system of backups at several levels:

- Every day, back up the company. If you have made design changes, make backups of the application objects or the database.
- Every week, back up the database. Store the results so that the five most recent backups are in different locations. (About every month or so, put a backup copy in the company's safe or other secure place.) If a problem occurs in one place, the previous backup can probably be used.

- Every six months, restore the latest backup onto a different computer than the one you normally work on. Then test the contents of the hard disk. If there are no errors, put the copy in the company's safe or another secure location outside the company.

Using this backup procedure, you will at most lose only a limited amount of data, because you should be able to restore data from a previous backup without any problem.

Backups in a Network

If you work with Dynamics NAV in a network, a good procedure is to make a backup to the local hard disk, copy it to the network server, and compare the copy on the server to the backup on the local hard disk.

1.2 Making Backups on C/SIDE Database Server

You can make backups by copying the database with an operating system command, but there are several important advantages to using the Dynamics NAV backup function:

Advantages of Using the Dynamics NAV - Backup Function

- The system tests the database for errors, so incorrect information is not copied to a backup.
- The data is compressed, so it takes up as little space as possible.
- The system calculates how much space the backup will use.
- You can keep working in Dynamics NAV while you are making a backup.

Whenever you create a new database, you must always use a Dynamics NAV backup to restore the *Data Common to All Companies* and the *Application Objects* into the new, empty database. Data common to all companies includes the report list, permissions groups, user IDs and printer selections, but no real company data. For more information, refer to page 20.

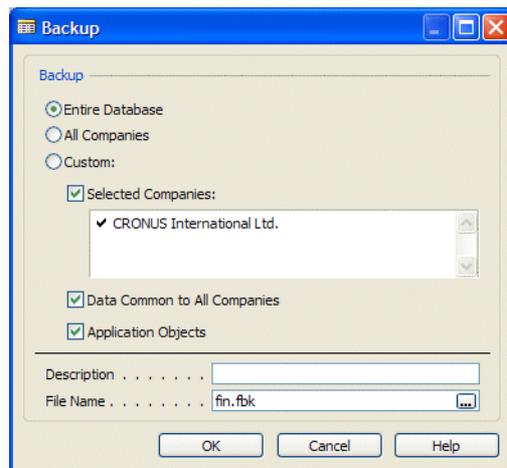
Tip

You can make a backup while other users are using the database because when you do, the program backs up the latest version of the database. If a user enters something into the database, a new version of the database will be generated, but the backup program will continue to back up the version that existed just before this new version of the database was created.

Making a Backup

Before you make a backup, you must open the database.

To make a backup, click Tools, Backup and the **Backup** window appears:



You can now specify how extensive you want the backup to be. Click the option button next to the type of backup that you want to make:

- *Entire Database* (including all companies in the database, data common to all companies, and application objects)
- *All Companies* (that is, only the companies)
- *Custom* (whatever you select)

If you select *Custom*, you must place a check mark next to the companies that you want copied. You do this in the list of companies under *Selected Companies*. You can make a backup of any item or combination of objects that you like. For example, the application objects and one company. You cannot make a backup of part of a company.

It is best to make an complete backup. If you need to restore a backup later on, you don't have to restore the entire backup – you can choose how much of the backup to restore.

Description, Name and Location of the Backup

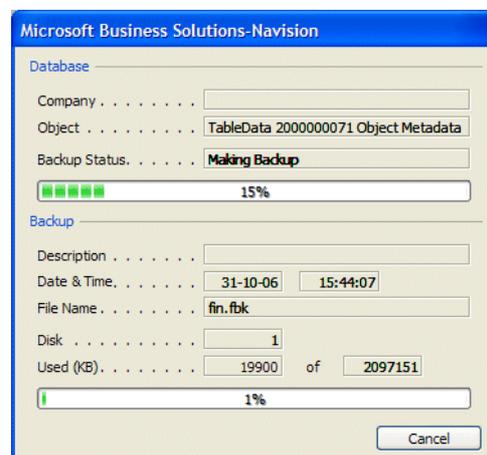
You must give the backup a unique description in the **Description** field at the bottom of the window. In the **File Name** field, enter a name for the backup. Dynamics NAV will suggest file names containing consecutive numbers and the file name extension `.fbk`. It is a good idea to use the default because Dynamics NAV will use the same default when you restore backups. It will also help you get a quick overview of the backups you have.

The file name of the backup includes the path (location on the disk or network). If you enter only a file name, the backup will be saved in the current folder on the current drive. This will normally be in the same place as Dynamics NAV. If you want to save the backup in a different location (because it takes up too much space, or because you want to save it on disks, for example), enter the path and the name in the **File Name** field.

To save the backup with the correct name and location, click the AssistButton... in the **File Name** field. A standard Windows dialog box appears and you can use this to select a target drive and directory where you want to store the backup. Type the file name of the backup. Click Save when you have finished.

The **File Name** field now contains the name of the backup.

Click OK to start making the backup, and the following window appears:



While the backup is being made, you can see how much of the database has been copied so far in the top status indicator. You can see the status of the disk or disk location it is being copied to on the bottom status indicator. To stop the backup, click Cancel. If you do not cancel it, the backup will proceed, and you will receive a message when it has finished.

Verifying a Dynamics NAV Backup

To verify that a backup is consistent, simply restore it to a new, empty database. If you are able to read the data in the database, the backup is consistent. If you have only backed up a company, restore the backup to a database that contains only the *Application Objects* and *Data Common to All Companies*, and see if you can read any data in the company.

Automatic Backup on Windows Server

If you want to make an automatic backup of the database at a specific time on Windows, and you run a client/server installation with the server running as a Windows service, you could use the built-in AT and net start/stop command. The AT command runs a given batch file at a given time. Type "AT" after a command prompt to get further help for this command. The batch file could look like this:

```
net stop <myserver>

backup <path and databasename>

net start <myserver>
```

where *myserver* is the name of the C/SIDE Database Server running as a service on Windows. *Backup* is the name of the backup program that backs up your database named "databasename." Store these three lines in a batch file, and supply this batch file as a parameter to the AT command. Remember to supply the full path to the batch file. The AT command requires that the Windows Schedule service is running.

Server Based Backup and C/SIDE Database Server

Dynamics NAV also has a server based backup program, called HotCopy. This program is installed with C/SIDE Database Server and is stored in the same directory as C/SIDE Database Server.

HotCopy can only be run from the server location and can only create backups on hard disks. You cannot make incremental or differential backups. You can make a backup of a database while clients are using it. The backups are file copies of the database and are not compressed.

For the complete instructions on how to make server based backups with HotCopy, see the manual *Installation & System Management: C/SIDE Database Server for Microsoft Dynamics NAV*.

1.3 Testing before Using Other Backup Methods

The Dynamics NAV backup function makes a backup by creating a file containing the most basic information from the database. When the backup file is restored back into the system, Dynamics NAV recreates the rest of the information from this file. The larger the database, the longer it takes to back it up and to restore the backup. Because of this, users of installations with large databases often choose to back up onto tape, using the tape station's backup program.

You can also use the Dynamics NAV backup function to make frequent backups to the hard disk, and then back up the entire hard disk onto tape. Doing this backs up both the working database and the Dynamics NAV backup of the database.

Testing the Database before Copying It to a Tape Station

If you choose to make backups without using the Dynamics NAV backup function, you must first test the database for errors. To do this, use the DB Test program property or click File, Database, Test on the menu bar. Testing the database is described in chapter 3 of the *Installation & System Management* manual for the server option that you are using. If you choose to use the built-in backup function, you do not have to run the test. While the backup is in progress, the backup program checks the database for errors. (It tests primary keys and data.)

1.4 Restoring Dynamics NAV Backups

Before you can restore a Dynamics NAV backup you must create an empty database into which you can restore the backup. This is because you cannot restore data over existing data.

Creating a new database is described in *Installation & System Management* manual for the server option that you are using. Remember that all the database files should be the same size.

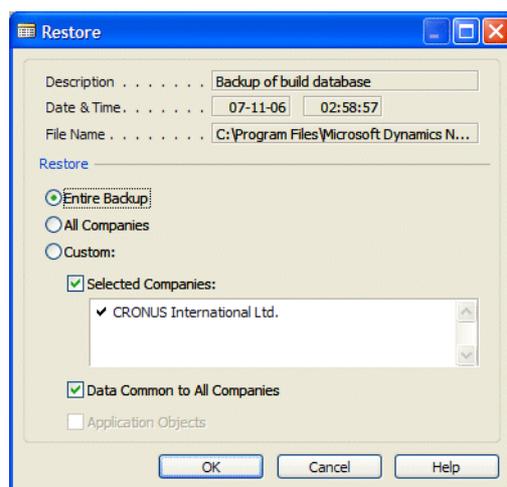
Although you do not want the new database to be too large, it must be large enough to contain the backup. If the backup was made using the Dynamics NAV backup facility, it will be packed, and you may not know its size when it is unpacked. In this case, start with the size that you think you need. If that is not large enough, you will get an error message when you try to restore, and you can expand the database a little at a time. (Expanding the database is described in the *Installation & System Management* manual for the server option that you are using.) Then you can try to restore the backup again.

When you have created the database and restored *Data Common to All Companies* and *Application Objects*, proceed in one of the following ways:

- If the backup was made with the Dynamics NAV backup function, click Tools, Restore to restore the backup.
- If the backup was exported to a tape station using the tape station's backup program, use the tape station's corresponding restore program. Remember that using the tape station's own restore program will probably overwrite the entire existing database.

When you click Tools, Restore, a standard Windows dialog box appears and you can use this to locate the backup on the disk, hard disk or network. Find the folder containing the backup, and select the backup file.

Click Open and the **Restore** window appears:

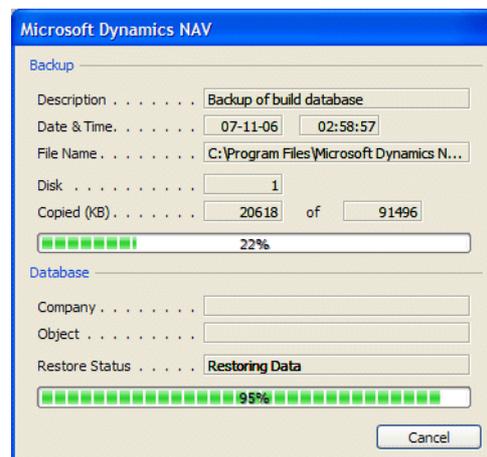


The name of the backup appears in the **File Name** field with its description and the time and date of its creation in the two fields above it. In the lower part of the window, you can select how much of the backup will be restored:

- *Entire Backup* (including all the companies in the database, *Data Common to All Companies* and *Application Objects*)
- *All Companies* (that is, only the companies)
- *Custom* (the *Selected Companies*, and can also include *Data Common to All Companies* and *Application Objects*). Remember that whenever you have a completely empty database, you must start by restoring a backup that contains at least these two options. You cannot restore the data common to all companies into a database that already has other tables in it.

You can limit the amount of the backup that you want to restore. To do this, remove some of the check marks in the window.

After you have made your selection, click OK to start the restore. A status window appears allowing you to monitor the progress of the restore procedure:



The amount of time it takes to restore a database depends on the size of the database.

The Minimum Size
Needed to Restore

To calculate the amount of free space that is required in the database to restore a backup, use the following formula:

Free space needed in database = twice the size of the selected items to be restored + the size of the generated secondary keys + twice the amount of the data in the largest table.

The last term represents a worst-case scenario, and you can usually manage with less space than this formula calculates. The generated secondary keys are those keys that were active when the backup was made.

1.5 Server Based Backup on the C/SIDE Database Server for Microsoft Dynamics NAV

Microsoft Dynamics NAV also has a server based backup program, called HotCopy. This program is installed with C/SIDE Database Server and is stored in the same directory as C/SIDE Database Server.

HotCopy can only be run from the server location and can only create backups on hard disks. You cannot make incremental or differential backups. The backups are file copies of the database and are not compressed.

You can make a backup of a database while clients are using it. However, if these clients are entering large amounts of data, an error can occur in the database backup. We therefore recommend that you make your database backups when no clients are using the system.

Furthermore, if HotCopy is the first 'user' to connect to the server it will place an exclusive lock on the database and no other users will be allowed to login while HotCopy is running. This is done for performance reasons.

If other users are already logged on the server, HotCopy runs as an ordinary session. HotCopy will then apply the version principle and copy its own version of the database. Running HotCopy as a session places a greater burden on the server.

Using HotCopy

You can only create a backup from the command prompt. You must specify a number of parameters:

```
hotcopy

source=databasefile1 (databasefile2...databasefile16)

destination="backup directory1" ("backup directory2"..."backup
directory16")

[description="This is the backup for Monday"]

[email=username@microsoft.com]

[servername=myserver]

[user=myname password=mypassword | osauthentication=yes]

[dbtest=normal]

[cc=yes]

[nettype=tcps | tcp | netb]
```

The parameters are case sensitive and those that are enclosed in [] are optional.

Every entry that contains a space must be placed inside quotation marks.

The following example only uses the mandatory parameters. The database is stored in the same directory as the server based backup program and the backup is stored on another computer:

```
hotcopy source=database.fdb  
destination=\\backupcomputer\backup\Monday
```

The following example uses all the parameters and the database is divided into two files:

```
hotcopy  
  
source=C:\database\database1.fdb C:\database\database2.fdb  
  
destination=\\backupcomputer\backup\Monday  
  
description="This is the backup for Monday"  
  
email=username@microsoft.com  
  
servername=myserver  
  
user=myname  
  
password=mypassword  
  
dbtest=normal  
  
cc=yes  
  
nettype=tcps
```

Note that you must enter the path to each database file.

Backup description
file

Alternatively, you can refer to a backup description file that contains all the relevant parameters. We recommend that you use the backup description file.

```
hotcopy source=backupdescription.txt
```

You can give the backup description file any name that you like.

The parameters are:

Parameter	Explanation
source	<p>The database file to be used for the backup. You must use this parameter. This can be either the name of the database or the name of a database file. If you want to make a backup of several database files, you must specify all of the file names.</p> <p>If you are using a backup description file, you must enter the name of the backup description file.</p> <p>You must enter either the absolute path or the relative path to the database file(s). When no path is specified the database file(s) must be stored in the same directory as HotCopy.exe.</p> <p>You can also enter the full path of the backup description file. If a backup description file is specified as the source file, all the other command line arguments are ignored. The format of the backup description file is described below.</p>
destination	<p>The path of the directory to which the database file is to be copied. You must use this parameter if you are creating the backup with the command line arguments.</p> <p>If only one path is specified for the destination but several files are specified as the source, all the files will be backed up in the same destination. If all the database files have the same name, the backups must be created in different directories.</p> <p>The database file(s) that you backup will be saved in the destination directory with the same name as the original(s).</p> <p>If the destination path is the same as the source path, the database file will be saved with a new suffix ".bak". For example, database.fdb will be saved in the source directory as database.fdb.bak.</p> <p>If you have previously made a backup in the destination directory, HotCopy will overwrite it. HotCopy will not inform you that it is overwriting the previous backup.</p> <p>Furthermore, if you want to overwrite the existing database backup, you must ensure that the destination is at least twice the size of the database that you want to backup and that half of this space is free. The extra space is required because HotCopy creates a temporary file before overwriting the previous backup. This temporary file is the same size as the database that you are backing up.</p>
dbtest	<p>A database test is performed before the backup is made. You can choose between three different tests that correspond to the standard Dynamics NAV database tests.</p> <p>The possible values are: minimum, normal and maximum.</p> <p>For more information about database tests, see Testing the Database on page 66.</p>
cc	<p>A consistency check should be performed after the backup files are saved. The consistency check is a bit for bit comparison of the original database with the backed up one.</p> <p>The possible values are: yes and no.</p>
description	<p>This is a free text that describes the backup. This text is displayed as the subject in the E-mail that the administrator can receive and as the "source" entry in the Event Viewer.</p>

Parameter	Explanation
email	The E-mail address of the person who is to be informed about the final status of the backup procedure. The E-mail message contains the following information: Subject: This is the backup for Monday (The description of the backup). Backup started at 2001/03/15 10:02:50. Backup ended successfully at 2001/03/15 10:06:06. If the backup failed the E-mail will only contain the description of the backup and a message informing you of the error that caused the backup to fail.
servername	The name of the C/SIDE Database Server that HotCopy should connect to when you initiate the backup procedure. If you omit this argument, HotCopy will try to create a connection using the "local host" name. If this also fails because C/SIDE Database Server is not running HotCopy will create a "local" connection. In other words you can create a backup when the database server is not running. We recommend that you only use HotCopy when C/SIDE Database Server is running.
osauthentication	Whether or not the person creating the backup can use single sign-on (NT authentication). The only value you can enter is yes. You can either enter this parameter or the 'user' and 'password' parameters.
user	If Windows authentication is not used this is the user ID of the person performing the backup.
password	If Windows authentication is not used this is the password of the person performing the backup.
nettype	The network protocol that is used for communication between the server and the clients. The possible values are: <code>tcps</code> (TCPS), <code>netb</code> (NetBIOS) and <code>tcp</code> (TCP/IP).

The Backup Description File

The backup description file contains information that HotCopy will use to perform the backup. The file has two section containing one or more entries. The backup description file can include comments – any text string that begins with a semicolon and does not take up more that one line.

The backup description file must have the following format:

```
[Backup Files]

\\backupcomputer\backup\Monday\database.fdb=\\computer\shareName\BackupDirectory

\\backupcomputer\backup\Monday\database1.fdb=\\computer\shareName\BackupDirectory

\\backupcomputer\backup\Monday\database2.fdb=\\computer\shareName\BackupDirectory

[Options]
```

```
;This is the description of the Monday backup  
  
description=This is the backup for Monday  
  
dbtest=normal  
  
cc=yes  
  
email=operator@microsoft.com  
  
servername=myserver  
  
user=myname  
  
password=mypassword  
  
osauthentication=no  
  
nettype=tcps
```

You must fill in the section called [Backup Files]. In this section you specify the database name on the left hand side and the backup directory on the right hand side. You can only specify a directory as the destination for the backup.

Output

The outcome of the backup procedure is always specified in the Event Log of the computer that was used to start the backup procedure.

The backup administrator can also be notified of the result of the backup procedure by E-mail.

Note

.....
If you have set up C/SIDE Database Server as a service and want Hotcopy to store the database backup on a remote computer, you must change the Log On options of the C/SIDE Database Server service. You must give the C/SIDE Database Server service the credentials of a domain user that has the appropriate rights on the remote computer and not use the default value (local system account).
.....

Restoring a Copy of the Database

To restore the database:

- 1 Stop the server.
- 2 Replace the database files with the backed up versions.
- 3 Start the server.

The backup must be restored to the same directory that the original database was stored in. If the original database has been deleted or the disks on which it was stored have been destroyed, you must recreate the original configuration with the same directory and exactly the same path as the original database before restoring the backup.

Alternatively, can start the server and specify the location of the new database and all of the database files in the command line.

Important

.....

The backup that HotCopy makes is a snapshot of the database. It does not contain information about any transactions that were carried out after the backup procedure was started. Dynamics NAV cannot create a transaction log. If you want to have a transaction log, you should migrate to the SQL Server Option for Microsoft Dynamics NAV.

.....

1.6 Making Backups in the SQL Server Option

Determining a procedure for creating backups is a vital part of maintaining your database. If you make frequent entries in your database, you will need a backup procedure that guarantees the reliability of your data and will allow you to fully recover your data after any failures that may occur.

We also recommend that you always make a backup before:

- altering a database.
- changing the collation used by the database.
- deleting a database. (You cannot retrieve it after it has been deleted unless you have saved a backup.)
- changing any server-wide or database configuration options.
- adding SQL Server logins or carrying out any other security-related operation.
- installing or removing equipment from the computer or computers on which the Dynamics NAV database is stored.
- performing data compression and optimizing tables.
- using programs to optimize your hard disk.

It is always a good idea to have an up-to-date copy of your company data in a secure place in case of fire, theft, computer viruses and so on.

We also recommend that you make a backup of the master database in SQL Server after performing any operation that changes the information in the master database.

The operations that update the master database and require a backup include:

- creating or deleting a database. However, if a database grows automatically as a result of the autogrow feature, this does not affect the master database. Adding and deleting files and filegroups does not affect the master database.
- adding logins or carrying out other login security-related operations.
- altering server-wide or database configuration options.
- creating or removing backup devices.

For more information about operations that update the master database and when to make backups, see Microsoft's SQL Server documentation.

Using the Microsoft SQL Server Backup Facility

An enterprise business solution must be able to manage a substantial amount of input and output activity every day. This increases the need to guard against information loss in case of database or hardware failure. It is therefore important that you implement a suitable backup procedure and that the system is set up so that the possibilities for data loss are minimized. If the system fails, you must be able to recover all of your data, including the data that has been modified since you made your last backup.

The SQL Server Option allows you to use two different types of backup: Microsoft SQL Server backup and Dynamics NAV backup. We recommend that you use the backup facilities provided by SQL Server for your daily needs.

Applying Transaction Log Backups SQL Server uses a roll forward capability to recover all the committed transactions that were carried out up to the point of failure. Roll forward is achieved by restoring your last database backup and applying all subsequent transaction log backups to recreate these transactions.

In such cases, only uncommitted work (incomplete transactions) will be lost, provided the active transaction log is also backed up and applied. The active transaction log also contains details of all uncommitted transactions. When you apply the active transaction log backup, SQL Server will roll back the uncommitted transactions.

Losing the active transaction log will prevent the system from successfully applying all the transaction log backups. One way of protecting both the transaction log files and the data files against hardware failure is to place them on mirrored disks.

When you place the primary data file and the transaction log files on different physical disks than the data files containing the user objects, you ensure that any media failure on the disks containing the user database files affects only those files. You can further protect the files from isolated media failure by placing the primary data file and the transaction log files on mirrored disks.

For more information, consult your Microsoft Certified Business Solutions Partner or Microsoft's SQL Server documentation.

In order to apply transaction log backups, you must choose the correct options when you create your databases and implement suitable backup procedures. The database options that affect your ability to apply transaction log backups are the following:

- Select into/bulk copy
- Truncate log on checkpoint

Both of these should remain disabled to prevent SQL Server from truncating your log file and to ensure that the log file contains detailed information. These options are located on the **Options** tab of the **Alter Database** and **New Database** windows. For more information, see the manual *Installation & System Management: SQL Server Option for the C/SIDE client*.

SQL Server Backups Microsoft SQL Server supports four different types of backup. You should choose the type of backup you will be using carefully in order to ensure that you get the level of security you require.

The four types of backup are the following:

- Database backup – this makes a backup of the entire database.
- Transaction log backup – this makes a backup of the entire transaction log.
- Differential backup – this makes a backup of all committed entries since the last database backup.
- File and filegroup backup – this makes a backup of individual files or filegroups within a database.

These can be combined to form many different types of backup and restore procedures, thereby allowing you to make your backup and restore strategy fit your database needs.

For more information about SQL Server backup and restore strategies, consult Microsoft's SQL Server documentation.

The SQL Server backup/restore system is server-based and is therefore considerably faster than the Dynamics NAV backup/restore system, which is client-based.

It is possible to restore a SQL Server backup of a Dynamics NAV database directly into SQL Server without using Dynamics NAV. You can also create a database directly in SQL Server without first having to create it in Dynamics NAV and then restore a SQL Server backup of a Dynamics NAV database directly into the database on SQL Server.

SQL Server allows you to make backups when the system is in use. With SQL Server, you can also automate many of your administrative tasks, including making backups. SQL Server also allows you to establish a database maintenance plan (with the help of a wizard) that includes database optimization, integrity tests and a backup plan.

SQL Server Tests

You should run SQL Server database consistency tests (using the SQL Server `dbcc` options) before making backups. SQL Server also allows you to include integrity tests in its backup procedure.

For more information about the backup facilities contained in Microsoft SQL Server and the different strategies that can be implemented, consult your Microsoft Certified Business Solutions Partner or Microsoft's SQL Server documentation.

Using the Dynamics NAV Backup Function

Whenever you create a new database, you must always restore a Dynamics NAV backup to retrieve the *Data Common to All Companies* and *Application Objects*, and place them in the new, empty database. Data common to all companies includes the report list, permissions groups, user IDs and printer selections, but no real company data. For more information, see the section called Constraints on Restoring a Backup on page 20.

When carrying out a Dynamics NAV backup in the SQL Server Option for Dynamics NAV, every object that is backed up gets locked and other users are given read-only access. This means that depending on what is being backed up, other users will not be able to work in the database.

Note

.....

Selecting the Single user database option before you make or restore a Dynamics NAV backup will improve performance. Ensuring that you are the only user using the database means that SQL Server does not have to lock resources thereby improving performance. To do this click File, Database, Alter, and in the **Alter Database** window, select the **Options** tab and then select the **Single user** field.

.....

Migrating to the SQL Server Option for Dynamics NAV

You must use the Dynamics NAV backup function when you want to migrate your data from Dynamics NAV to the SQL Server Option for Dynamics NAV.

Migrating involves making a Dynamics NAV backup of the database and then restoring it into an empty database in the new version of Dynamics NAV.

Before converting your earlier versions of Dynamics NAV databases to the SQL Server Option for Dynamics NAV, you should be aware of the following issues.

Security	<p>If Windows authentication is being used, the SQL Server Option for Dynamics NAV requires that each user has the same ID in the Dynamics NAV Windows Login table and in their Windows account. If database server authentication is being used, the user's SQL Server login must be the same as their ID in the Dynamics NAV User table.</p> <p>The synchronization of the security system is carried out at the end of the restore procedure. If the user IDs are not identical, then restoring the database will result in a message informing you that the security system is inconsistent and that you should run the synchronization process after these user ID problems have been corrected. The database will still be restored successfully. For more information about the synchronization process, see the chapter called Security and User Setup in the manual <i>Installation & System Management: SQL Server Option for the C/SIDE Client</i>.</p> <p>To avoid this problem, make sure the user IDs are the same as the IDs used in the Windows or SQL Server accounts before you make a backup of the database in the previous version of the program. It is probably easier to change the IDs in the Dynamics NAV Windows Login table than to change the IDs used in the Windows accounts.</p>
Transaction Log Size	<p>Restoring a database increases the size of the existing SQL Server transaction log. The transaction log contains information about every change that has been made to the database, including information about newly created and modified records and logs of, for example, index creation operations. This means that the size of the transaction log can be increased by at least the amount of data restored into the database. Make sure that you have enough space for the enlarged transaction log.</p>
Linked Objects	<p>When you make a Dynamics NAV backup, the table descriptions of all the linked objects are also backed up but the table data is not backed up. When you restore a Dynamics NAV backup that contains linked objects, the SQL Server objects that the linked objects refer to must already exist in the database into which you are restoring the backup.</p> <p>If the SQL Server database contains a view that refers to a Dynamics NAV table that is contained in the backup but does not yet exist in the database, you must create a dummy view that selects literal values for its columns before restoring the backup. These literal values must be defined in terms of the appropriate SQL data types. Creating the dummy view allows the linked objects to be successfully restored. After the database backup has been successfully restored you can redefine this view so that it refers to the Dynamics NAV table that has now been restored into the database.</p> <p>After successfully using Dynamics NAV to restore your database, you should make a SQL Server backup of the entire database. There are two reasons for this:</p> <ul style="list-style-type: none"> • When you make a SQL Server backup of the entire database, the transaction log will be truncated, thereby reducing the size of the transaction log that was created during the migration procedure. • You will now have a SQL Server backup of your database that you can restore if it becomes necessary. This backup also serves as the starting point for subsequent transaction log backups. You will no longer have to use the Dynamics NAV restore facility, which is time-consuming and can create a large amount of data in the transaction log.
Table Relationships	<p>If the synchronization of the table relationships fails when you are restoring a database backup, the backup will still be restored successfully. The only task that will not be completed is the synchronization of the table relationships.</p>

1.7 Advanced Backup and Restore Information

The backup file is a compressed copy of the database. The backup program copies small blocks from the database, compresses them and gives them a header. Among other things, the header has a *header checksum*, which ensures data integrity. When the backup program has written all the small blocks, it calculates and writes a *master checksum*. These two checksums have two purposes:

- To verify that data in the backup is consistent and not corrupted
- To protect the backup from modifications

The Header in the Backup File

At the beginning of the backup file, you will find a header in ASCII format containing a list of all the objects in the file. To see a list of the objects included in the backup (for example, named backup.fbk and located in the folder d:\backup\), go to a command prompt and type the following:

```
type backup.fbk | more
```

The backup file contains an end of file marker after the list, so you do not see the binary content of the file. For each object, the list will show you its type, number, name, date and time of creation, size in bytes and a version number. If the object is table data, the version number is replaced with the name of the company to which the data belongs. This list is useful for seeing which objects are included in the backup, without restoring the entire backup.

Constraints on Restoring a Backup

There are certain constraints when you restore a backup into a non-empty database. When you create an empty database, it is actually not completely empty. An empty database is defined as a database that contains only an empty security system and the company table definition. You can define and limit user access permissions to the database in the security system. An empty security system is identical to the security system that is automatically generated when you generate an empty database in Dynamics NAV. An empty security system consists of the tables listed below:

Table	Defines...
User Group	the user groups that you want in your system
Permissions	which rights the different user groups have
User	the individual users and their passwords
Member Of	which groups the individual users belong to

Of the tables here, only the **User Group** and **Permission** tables, where a superuser has been set up, hold data. If you change the contents of the four security tables, the security system is no longer empty.

The contents of the backup can be divided into the following data types:

- *Application Objects*, which form the application, such as the **Customer** table, the **Item** table and the **G/L Account** table

- *Data Common to All Companies*, which includes the report list, permissions groups, user IDs, printer selections, and the security system tables
- *Company Data*, which is all the data in the tables

These three data types can be restored individually from different backups.

To restore a backup from three different backups into an empty database:

- 1 Restore the objects of the type Application Objects from one backup.
- 2 Restore the objects of the type Data Common to All Companies from another backup.
- 3 Restore Selected Companies from yet a third backup.

The following table contains answers to questions or problems that may arise during the restore process:

Question or Problem	Answer
Can I restore everything into an empty database?	All data types can be restored into an empty database.
Can I restore objects of the type <i>Application Objects</i> into a nonempty database?	No. Objects of the type <i>Application Objects</i> can only be restored into an empty database.
I cannot restore my company into the database.	You cannot restore the data of a company if there is already another company with the same name in the database. If, however, you want to restore the company that is in the backup, rename the existing company in the database and then restore the company in the backup.
I cannot restore objects of the type <i>Data Common to All Companies</i> .	If the database contains objects of the type <i>Data Common to All Companies</i> other than the security system tables, it is not possible to restore objects of type <i>Data Common to All Companies</i> .
I am prompted to confirm overwriting of the existing security system while restoring. What does that mean?	If all objects of the type <i>Data Common to All Companies</i> in the database are security system tables, then all objects of the type <i>Data Common to All Companies</i> can be restored. If neither the security system in the database nor the security system in the backup is empty, you will be prompted to confirm whether the existing security system in the database should be overwritten by the security system from the backup.
When a database has been completely restored, I receive an error message telling me that the Dynamics NAV and SQL Server security systems have not been synchronized successfully.	Ensure that the user IDs in the Dynamics NAV User table match either the Windows NT accounts or the SQL Server logins. When you have made the necessary changes, initiate the synchronization process by clicking Tools, Security, Synchronize. For more information on this topic, see chapter 4 of the manual <i>Installation & System Management: SQL Server Option for the C/SIDE Client</i> .

Question or Problem	Answer
While I am restoring a database I receive a message asking whether or not I would like to link a Dynamics NAV table to a SQL Server object. What does this mean?	This means that the database you are restoring contains a table that has the same name as an existing SQL Server object. Linking them means that Dynamics NAV will not create a table in SQL Server but will use the existing object instead and will start entering data from the backup into this SQL Server object. To avoid this, cancel the restore procedure and rename or delete the SQL Server object before beginning the restore process again.

Changed Table Definition

If a field in a table definition has changed in type or number in relation to the backup, it is not possible to restore data into the corresponding table. If you have changed some of the properties of a field in a table definition, the restore program will attempt to fit the data into the table anyway. If, for example, you have shortened the length of a text field from 80 to 40 characters, and there is no data in that specific table in the backup that is longer than 40 characters, the backup will be successfully restored. Otherwise the restore procedure will stop, and you will have to increase the length of that particular field. After that, you can continue the restore process from where it stopped.

1.8 Service Packs and Security Updates

The installation is not complete until you have installed the latest service packs and applied the latest security updates to your system. Keeping your system up-to-date by installing the latest service packs is one of most important things you can do in managing the security of your system.

You should visit Microsoft Update and install all the relevant updates on every computer in your Dynamics NAV installation. We also recommend that you enable Automatic Updates on each computer so that they can receive security & critical updates automatically.

