

Back-up Procedures

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Automatic Back Ups

Other part of the System that affect Backups

System Wide Setting - Backup Options During NightJobs (Before or After)

This option on the System Wide Setting Menu (SET 4) lets you choose to run your backup before or after Night Jobs. Most customers choose to run after Night Jobs. This way if there is an error with the backup it can be easily canceled without impacting the Night Jobs run. However, the trade-off to this strategy is having a snapshot of your system before Night Jobs changes the data buckets makes it much easier to recover the system should there be a problem with the run. This setting is very dependent on your business hours and Night Job schedule times.

Configuring Backups

You can schedule back ups to run on night jobs from the AS/400 Job Scheduler so you do not have to submit them manually each night.

Note: It is important for everyone to be off the system during the backup process. The system skips over active data therefore it is not backed up.

The normal daily backup procedure is fully automated. The only human intervention required is that someone needs to place a tape in the backup device every day.

1. Access the AS/400 Job Scheduler (option 7 on the Data Processing Menu). The fields that pertain to back ups are highlighted.

Enter **Y** if you want a back up to run or enter **N** if you don't want to run a back up as part of Night Jobs.

If you enter "**Y**", Backup runs according to the parameters in the System Wide Setting - Backup Options During Night Jobs (Before or After).

If ***SYSTEM** is listed in the previous field, enter the interval at which the system should back itself up (***DAILY**, ***WEEKLY**, ***MONTHLY**). If ***DANCIK** is entered in the previous field, enter the device name (***T1**, ***Tape**.) of your tape device. You may enter a question mark (?) in order to display a list of your tape devices.

SAL GBRANNEN		NIGHT JOBS RUN OPTIONS						9/11/08 16:04:47	
	Run Night Jobs (Y/N)	Run Time	Job Ptu	Bckup (Y/N)	Backup Type or *DANCIK or *SYSTEM	Backup Device or Interval	Run Night Jobs (Y/N)	Regular Jobs Maint (Y/N)	Extra Jobs (Y/N)
SUNDAY	N	5:30:00	2	Y	*SYSTEM	*MONTHLY	Y		Y
MONDAY	N	5:30:00	2	Y	*DANCIK	T1	Y		Y
TUESDAY	N	5:30:00	2	Y	*DANCIK	T1	Y		Y
WEDNESDAY	Y	3:30:00	2	Y	*SYSTEM	*WEEKLY	Y		N
THURSDAY	N	5:30:00	2	Y	*DANCIK	T1	Y		Y
FRIDAY	N	3:30:00	2	Y	*DANCIK	T1	Y		Y
SATURDAY	N	3:30:00	2	Y	*SYSTEM	*DAILY	Y		Y

It is important to note that these options (***DANCIK** or ***SYSTEM**) **DO NOT** perform a full system backup. This means that in order to back up things like your operating system, applications, printer set-ups, user profiles, IBM libraries you need to perform a Full System Save. For more information on a Full System Save refer to "Full System Save" on page 9.

***DANCIK** - Backs up only Dancik information in the User (FVUSER), Dancik Data (QS36F), and Gentran data (G3x0DTA) libraries. These libraries contain most of the Dancik system information such as: Billto files, price and cost data, and invoicing records. The * is part of the entry. It denotes the entry as a system value. When using the ***DANCIK** backup, the big question is what's not being saved? Just remember, ***DANCIK** only saves the data libraries on your system. If this were your only save you would need to rebuild user profiles, print and workstation devices, IFS files, etc. in the event of a catastrophic loss. That's where the ***SYSTEM** backup comes in to play. This backup hooks into the iSeries built in backup functionality.

SYSTEM** - This option allows you to select the data/libraries to back up. If this option is used, a time interval (daily**, ***weekly** or ***monthly**) has to be added in the Backup Device or Interval field. This time interval references the Backup tasks menu which is where you select the data/libraries you want for each interval. At the very minimum, when performing a ***System** back up, you should include the FVUSER and QS36F libraries.

For more information on the Backup Tasks menu, refer to "Go Back up Menu" on page 3.

Errors that you may encounter

- **Could not initialize tape** - In this case make sure that the tape is not write protected and is the correct format and density for the tape device.
- **Not all objects could be saved** - This is normally caused by a job having locks on objects in QS36F. Make sure that no one is signed on to the system console with a Dancik user profile.

All other errors would indicate a problem with the tape cartridge, tape device, or IOA.

Go Back up Menu

Use this menu to set the parameters for Daily, Weekly, and Monthly back ups.

Note: The GO BACKUP menu is an IBM supplied program. These steps are meant to show how the GO BACKUP menu can be used to configure a back up of Dancik data. For more detailed information on the GO BACKUP menu, refer to the IBM documentation or use the Field level help (F1 or F4).

1. On a command line, enter **GO BACKUP**. The Back up Tasks screen appears.

```
BACKUP                               Backup Tasks                               System:  SAL
To select one of the following, type its number below and press Enter:
    1. Run backup
    2. Display backup status
    10. Set up backup
    20. Initialize a tape
    21. Initialize a tape set
```

2. This is the interface to IBMs built in backup functionality. Select option **10 - Set up backup**.

```
SETUPBCKUP                           Set Up Backup                           System:  SAL
To select one of the following, type its number below and press Enter:
    1. Change daily backup options
    2. Change weekly backup options
    3. Change monthly backup options
    10. Change library backup list
    11. Change folder backup list
    20. Change backup schedule
```

3. Notice on this screen the first 3 options - daily, weekly, and monthly. Each of these options corresponds to a separate set of task that you can set up. Just remember, none of these options are configured by themselves; you must setup each task yourself depending on your needs. Select a backup option (daily, weekly, or monthly). In this example the daily backup (option 1) was selected.

```

Change Daily Backup Options
System: SAL

Type choices below, then press Enter.

Where to back up:
Backup device . . . . . TC      Name, F4 for list
Tape sets to rotate . . . . . *ANY  Name, *ANY
_____
_____
_____
_____
_____
Erase tape before backup . . . . . N      Y=Yes, N=No

More...
F1=Help  F3=Exit  F5=Refresh  F12=Cancel  F16=Change library backup list
F17=Change folder backup list  F18=Change schedule

```

- The first parameter, **Where to back up**, indicates the device this backup option will use. This can be helpful if there are multiple tape devices on the server. For example, you could set Night Jobs to use on device and set a separate backup on another.

The **Tape sets to rotate** option must be set to *ANY in order to use it with Night Jobs.

Erase tape before backup can be set to N, since Night Jobs does this for you automatically.

- Scroll down to display more parameters.

```

Change Daily Backup Options
System: SAL

Type choices below, then press Enter.

What to back up:
User libraries . . . . . 1      1=Selected from list
                                   2=All
                                   3=None
Folders . . . . . 1      1=Selected from list
                                   2=All
                                   3=None
User directories . . . . . 2      2=All
                                   3=None
Security data . . . . . Y      Y=Yes, N=No
Configuration . . . . . Y      Y=Yes, N=No

How to back up:
Save changed objects only . . . . . N      Y=Yes, N=No
Submit backup as a batch job . . . . . N      Y=Yes, N=No
Print detailed report . . . . . N      Y=Yes, N=No

Bottom
F1=Help  F3=Exit  F5=Refresh  F12=Cancel  F16=Change library backup list
F17=Change folder backup list  F18=Change schedule

```

- On this screen, you can truly customize what you would like to save. On this system, notice that **User Libraries** is set to 1 - Selected from List. Pressing F16 shows the list being referred to.

- Press **F16** to see which libraries are included in each back up option. At a minimum, every day you should save QS36F and FVUSER, as well as G3x0DTA if you are using Gentran. You may also consider saving the Dancik program library (DES12P), Dancik Archive Library (DODARC,) and the IBM user supplied libraries (QUSRSYS and QGPL).

Change Library Backup List						System: SAL
Find library _____ Starting characters						
Type options below, then press Enter.						
2=Change backup 5=Display library contents 8=Display details						
Opt	Library	-----Backup-----			Last Backup	Changed
		Daily	Weekly	Monthly		
-	QSRVAGT	No	No	No	06/07/08	Yes
-	QSYS2	No	No	No	06/07/08	Yes
-	QS36F	Yes	Yes	Yes	06/07/08	Yes
-	QUSRDIRDB	No	No	No	06/07/08	Yes
-	QUSRINFSCR	No	No	No	06/07/08	No
-	QUSRNOTES	No	No	No	06/07/08	Yes
-	QUSRSYS	No	No	No	06/07/08	Yes
-	RDA	Yes	Yes	Yes	09/12/08	No
-	RDFONT01V5	Yes	Yes	Yes	09/12/08	No
-	REFOBJAUTL	Yes	Yes	Yes	09/12/08	No
-	RHOLLAMON	Yes	Yes	Yes	09/12/08	No
						More...
F1=Help		F3=Exit		F5=Refresh		F11=Display descriptions
F14=Select other libraries						F12=Cancel
						F15=Change all

- Press **F12** to return to the Change Daily Backup Options screen.

Change Daily Backup Options			System: SAL
Type choices below, then press Enter.			
What to back up:			
User libraries	<u>1</u>	1=Selected from list	
		2=All	
		3=None	
Folders	<u>1</u>	1=Selected from list	
		2=All	
		3=None	
User directories	<u>2</u>	2=All	
		3=None	
Security data	<u>Y</u>	Y=Yes, N=No	
Configuration	<u>Y</u>	Y=Yes, N=No	
How to back up:			
Save changed objects only	<u>N</u>	Y=Yes, N=No	
Submit backup as a batch job	<u>N</u>	Y=Yes, N=No	
Print detailed report	<u>Y</u>	Y=Yes, N=No	
			Bottom
F1=Help		F3=Exit	
F5=Refresh		F12=Cancel	
F17=Change folder backup list		F18=Change schedule	
		F16=Change library backup list	

- You may also choose to backup **Folders** in the same way. In the Dancik system, folders are small and non critical so leaving this option set to **2 = All** will not adversely effect the backup.
- User Directories** is a very important parameter. This is the iSeries IFS which contains important files - particularly with Dancik web applications. Dancik suggests you set this field to **2 = All** as well.

- **Security data** and **Configuration** save the system user profiles and/or line/controller/device descriptions. As these do not change often they can be saved weekly.
 - **Save changed objects only** and **Submit backup as a batch job** should be set to **N**, however **Print detailed report** should be set to **Y**. This will give you a log file as to what was saved.
9. Once this configuration is done, you can setup the Dancik backup to use it. Access the Night Jobs Run Option screen (**DP 7**).

In the example shown below, the system will run the daily backup options on Monday-Thursday. On Saturday, the *WEEKLY backup options are used. With this method, you could setup the *DAILY backup to save QS36F, FVUSER, and G3X0DTA. Then, on Saturday the system could run the *WEEKLY option and save the data libs plus DES12P, DODARC, configurations and user objects.

SAL JOE		NIGHT JOBS RUN OPTIONS						9/17/08 15:10:08	
	Run Night Jobs (Y/N)	Run Time	Job Pty	Bckup (Y/N)	Backup Type *DANCIK or *SYSTEM	Backup Device or Interval	Run Regular Night Jobs (Y/N)	Run Extra Maint Jobs (Y/N)	
SUNDAY	N								
MONDAY	Y	20:00:00	3	Y	*SYSTEM	*DAILY	Y	N	
TUESDAY	Y	20:00:00	3	Y	*SYSTEM	*DAILY	Y	N	
WEDNESDAY	Y	20:00:00	3	Y	*SYSTEM	*DAILY	Y	N	
THURSDAY	Y	20:00:00	3	Y	*SYSTEM	*DAILY	Y	N	
FRIDAY	N								
SATURDAY	Y	5:00:00	3	Y	*SYSTEM	*WEEKLY	Y	N	

Bottom

Note: Keep in mind the more you save the longer your backup window needs to be.

Manual Backups

The Backup Menu contains the basic commands for initializing tapes and performing backups. Normally, your backup will be performed automatically as part of the Night Jobs. Therefore, you will rarely need to use this menu.

The Backup Menu is accessed via menu option BCK,

```
9/12/08          DANCik INTERNATIONAL, LTD.          GBRANNEN
11:53:24          Backup Menu                        SAL
                                                    R2008

Opt Description
-----
 1 Save All User Data Files
 2 Save All Dancik International Program Libraries
 3 Restore A Dancik International Program Library
 4 Initialize A Tape

10 Display Backup Status

          Enter Desired Menu / Option# ====> BCK ____

F1=Add  F2=Select  F5=Personal  F9=Additional  F10=Scan  F11=Alt View  H
```

Following is a summary of options:

- **Save All User Data Files** - saves your data files for all Dancik International systems.
- **Save All Dancik Program Libraries** - saves all of the Dancik International program libraries.
- **Restore a Dancik Program Library** - restores a specific program library.

Initialize a Tape - initializes a tape, making it ready to use for backups. We recommend that new tapes are initialized using this option prior to being used for the Night Jobs backup to prevent your night jobs backup from halting due to a tape in the wrong format.

Backup Verification

Option 10 - Display Backup Status

This option, on the Backup Menu (BCK), lets you verify back ups and to see exactly which files were effected.

```
9/12/08          DANCik INTERNATIONAL, LTD.          GBRANNEN
11:53:24          Backup Menu                        SAL
                                                    R2008

Opt Description
-----
 1 Save All User Data Files
 2 Save All Dancik International Program Libraries
 3 Restore A Dancik International Program Library
 4 Initialize A Tape

10 Display Backup Status

          Enter Desired Menu / Option# ====> BCK ____

F1=Add  F2=Select  F5=Personal  F9=Additional  F10=Scan  F11=Alt View  H
```

Note: Backups done automatically through the Night Job Run

```

Display Backup Status
                                SAL
                                09/12/08 12:09:11

                                Last
                                Backup
                                Date
                                Tape
                                Set

What Was Backed Up
User libraries:
  All . . . . . :
  All (changes only) . . . . . :
  From list . . . . . : 09/12/08 *ANY
  From list (changes only) . . . . . :
Folders:
  All . . . . . :
  All (changes only) . . . . . :
  From list . . . . . : 09/12/08 *ANY
User directories:
  All . . . . . : 09/12/08 *ANY
  All (changes only) . . . . . :
Security data . . . . . : 09/12/08 *ANY
Configuration . . . . . : 09/12/08 *ANY

More...

Press Enter to continue.

F1=Help  F3=Exit  F12=Cancel  F22=Display backup history

```

Use **F22=Display backup history** to check on all the backups done in the current month.

```

Display Backup History
                                SAL
                                09/12/08 12:09:11

Type options below, then press Enter.
5=Display backup details

Option      Backup      Backup      Tape      Changes
           Date       Options     Set        Only
█          09/12/08   Daily       *ANY       No
-          09/11/08   Daily       *ANY       No
-          09/10/08   Daily       *ANY       No
-          09/08/08   Daily       *ANY       No
-          09/05/08   Daily       *ANY       No
-          09/04/08   Daily       *ANY       No
-          09/03/08   Daily       *ANY       No

```

DSPMSG QSYSOPR

This command displays system messages. Issue this command after night jobs, which is when back-ups normally occur, to ensure the backup was successful.

After the command is issued, scroll down through the messages, until you get to one that informs you the back up was completed.

```

                                Work with Messages
                                System:      CIK400

Messages in:  QSYSOPR

Type options below, then press Enter.
  4=Remove  5=Display details and reply

Opt  Message
  █
  *****
  From . . : NIGHT          09/11/08  23:07:05
  -- BACKUP IS COMPLETE --
  From . . : NIGHT          09/11/08  23:07:05
  *****
  From . . : NIGHT          09/11/08  23:07:05
  -- Remove tape cartridge from tape drive. --
  From . . : NIGHT          09/11/08  23:07:05
  -- Backup is now finished. All data files have been saved. --
  From . . : NIGHT          09/11/08  23:07:05

More...

F1=Help  F3=Exit  F5=Refresh  F16=Remove messages not needing a reply
F17=Top  F18=Bottom  F24=More keys

```

It is important to note that if someone is active on the system when the back up is in process the files that are in use will not be backed up. This is why it is very important to have everyone off the system before backups are started.

Full System Save

Through the Dancik International night jobs, your system data libraries are backed up on a nightly basis. However, it is still important to backup the entire system on a regular basis. A “full system save” backs up to tape all system licensed internal code, user profiles, configuration objects, *IBM libraries, private authorities, and other types of system objects not included within the normal nightly backup.

It is recommended that this type of save be performed either on a monthly or quarterly basis, or more frequently depending on operations to be performed on the operating system and licensed internal code (CUME installs, OS/400 upgrades, etc.). The procedure contained herein is designed to present a system operator with a clear picture of what is necessary to run a full system save using the “go save, option 21” method.

Note: During this save, the entire system is completely inaccessible to users. You should plan on performing this save after hours, on weekends, or whenever there is the least amount of activity on the system. In addition, this save may take between four and six hours.

1. Sign on to the system console as **QSECOFR**.
2. Make sure all users are signed off the system and no jobs are running.
3. It's a good idea to initialize 2 tapes. Insert the first tape into the drive and issue the command **INZ-TAP DEV(TAP01) NEWVOL(SAVSYS) CHECK(*NO) ENDOPT(*UNLOAD)** where **TAP01** is the

two character name of your tape drive. After the tape ejects, run the same command changing the **ENDOPT** parameter to ***REWIND**.

4. GO SAVE
5. 21
6. Press **Enter** at the “Save the Entire System” screen.
7. Fill out the parameters as shown below:

Specify Command Defaults		
Type choices, press Enter.		
Devices	TAP01	Names
Prompt for commands	N	Y=Yes, N=No
Check for active files	N	Y=Yes, N=No
Message queue delivery	*NOTIFY	*BREAK, *NOTIFY
Start time	*CURRENT	*CURRENT, time
Vary off network servers	*ALL	*ALL, *NONE
Unmount file systems	Y	Y=Yes, N=No
F3=Exit F12=Cancel		More...

Page down:

Specify Command Defaults		
Type choices, press Enter.		
Print system information	N	Y=Yes, N=No
Use system reply list	N	Y=Yes, N=No
Spooled file data	*ALL	*NONE, *ALL

Note: You can use the Start Time parameter on page one to schedule the save. For example, submit the job on Friday morning at 08:00:00 setting the start time to 23:00:00. The system will wait until 11:00 pm to run the save.

8. That's all there is to it. Once the save is done the system ejects the tape and restarts all subsystem.

Dancik's Backup Recommendations

The whole idea of backups are an insurance policy against loss, you don't need them until you need them. We feel it is better to have a conservative approach to your backup routine than not. The following is a recommendation that we use at Dancik, you are not bound to using our structure.

Monthly System Save

Dancik suggests at least one full system save performed each month. The system save routine is manually invoked, therefore it does require human intervention on the day when it is performed (console prompts need to be responded to, and given that the console is typically not a networked device --- it is locally attached only to the iSeries, someone needs to be there).

Backup Media

We tend to recommend an ultra conservative approach, and suggest the following numbers of tapes available:

- 1 each for every business day of the week (M-F equals 5 and so on).
- 4 weekly sets
- 2 each for conducting system saves of the entire system.
- 2 or 3 extra tapes for wear and tear / emergencies.

Troubleshooting the System:

The iSeries does an excellent job of reporting errors. Sometimes, however, it's hard to determine where to look to find this information. The outline below shows the major places, in order, to look for error information:

1. **DSPMSG QSYSOPR** - This is the system operators message queue. Most error messages generated by the system can be found here. Major error codes to look for include:
 - **CPPEA13** - *Attention* Contact your hardware service provider
 - **CPP8988** - A critical system hardware problem has occurred. Critical Message Handler has been run.
 - **CPI099C** - Critical storage lower limit reached
 - **CPI1165** - One or more device parity protected units still not fully operational.

A complete list of messages and their causes can be found here:

<http://publib.boulder.ibm.com/infocenter/iseries/v5r4/index.jsp?topic=/rbam6/msmq.htm>

2. **DSPLOG** - This is the system log. Additional information may be found here that is not logged to **QSYSOPR**.
3. **WRKJOB** - When a job fails viewing the joblog provides valuable information. This can be very helpful when troubleshooting printer problems as well. Here's an example of viewing the job log for printer P6:

- **WRKJOB P6**
 - If there is more than one job listed find the active job, place a 1 beside it and press **Enter**
 - Option 10, Display Job Log
 - Press **F10** and page up to review the messages\
4. **WRKPRB** - This is the system problem log. It will show critical error messages being reported to the service manager.
 5. **WRKOUTQ QEZDEBUG** and **QEZJOBLOG** - Holds program and core dump reports
 6. **STRSST** - System service tools contains log files specific to the SLIC and not accessible from the operating system. To access these logs file:
 - STRSST
 - Sign on with your service tools ID and password
 - 1. Start a service tool
 - 1. Product activity log - take option 1 and select the product to work with
 - 7. Hardware service manager
 - 6. Work with service action log -take this option to see hardware needing attention on the system.
 7. WRKLNK '/home/apache/logs' - this is where the access, error and JDK logs are stored for the apache HTTP server.

Iseries Service Functions manual:

This information plus much more can be found in the IBM Service manual:

http://www-01.ibm.com/support/docview.wss?rs=0&dc=DA410&dc=DA450&q1=errors+AND+Systemi_HW_documentation&uid=isg2iea5b6be609a12af285257350003a03e&loc=en_US&cs=UTF-8&lang=all

Consult this guide for information on resetting the service tools passwords.