

Data Backup & Archive Procedures

RFMS Webinar Series

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December 2018

RFMS Backup Message in Order Entry

A reminder message with the date of the last SQL backup will appear when opening Order Entry if the backup is more than 2 days old. The message will continue to appear until the backup of the SQL database is done.

Although you may do nightly back-ups, you may **not be performing a SQL back-up which is necessary to ensure a full recovery, if necessary.**

Best Practices for Performance, Backups, and Data Integrity

Time and time again, we have found the practices below to mitigate most IT risks that companies face, be they performance issues or a company's faith in the integrity of their data. Many of these practices mirror our own. While this document may not render a company's server immune to issues, it can bring it closer to this ideal than one might think.

This section contains eight crucial pieces of information to help a business achieve the ideal RFMS experience:

- [Why We Recommend an In-House Technician be SQL-Certified](#)
- [Best Practices for Database Backups](#)
- [Best Practices for Folder Backups](#)
- [How to Test the Integrity of a Backup](#)
- [How to Test an Update's Compatibility with a Company's Environment](#)
- [SQL Database Administrator Visits and Recommendations](#)
- [Certified Network Analyst Visits and Recommendations](#)
- [Baseline Performance Estimates, SQL Server Specifications](#)

In-House Technician Should be SQL- Certified

There are several reasons this is stated throughout our documentation and communication – the most important of which being that emergencies can never be predicted, and data cannot always be recovered. The hidden costs of an underqualified tech – even when excluding losses in underutilized man hours – outweigh the on-paper savings by far.

Even when following the best practices of having a qualified Network Analyst and DBA visit once a year, this really only guarantees better performance for at most a month – only a qualified in-house or contracted technician can guarantee a well-run network.

An unqualified technician cannot be expected to know the complex internals of SQL innately, nor to even pick it up in time for a live deployment. Experience is and always has been the best shield against disaster and underperformance.

Keeping in mind these next thoughts are optional (though definitely recommended) if a company wishes to test their working knowledge against the certification, a company should expect the technician to understand the following:

- Common SQL terminology (database, mdf, ldf, log file, sql backups, maintenance plans, sa)
- Common SQL processes – how to run a backup, how to shrink a log file, how to setup a cliconfg connection, how to use ODBC, and how to change compatibility mode for a database.

Best Practices for Database Backups

For the most up to date information in the case of an IT disaster, we recommend not only that daily full backups be run, but hourly log backups be run as well. If the company is using SQL Express, the steps for this process can be requested in the document “RFMS Backups”. (It may also be called “4 – RFMS Backups” if it is provided as part of a package of documents about an installation or migration.) If the company is using SQL Standard, we recommend instead that this process be done through the SQL Management Maintenance Plan Wizard. There are also inexpensive and reliable third-party backup programs available online that can send emails to designated employees if the backup fails.

As with Folder Backups, we recommend that the database backups that are made be backed up to cloud storage and/or a NAS, and/or an external drive.

Please keep in mind that while in rare cases it may be troublesome and/or time-consuming to do, almost all of the content inside the RFMS folder can be reproduced with a qualified technician and freely available RFMS documentation. However, without involving a qualified DBA, a data recovery expert, and often even the RFMS programming department, almost none of the content of the database can be reproduced, and **even under these often costly circumstances, there is no guarantee of a full recovery.** Please investigate any problems detected with database backups **immediately and thoroughly** to avoid catastrophic loss of data during an IT disaster.

Best Practices for Folder Backups

Our best practices are to keep a daily copy of the RFMS folder to minimize downtime during a migration or IT disaster to its lowest possible amount. Please configure the RFMS folder backup system to only run at a certain time/times in the day, as constant backups will slow RFMS performance considerably (for example, a Dropbox folder by default will

automatically sync any files placed to Dropbox up to the latest version. Carbonite and other cloud backup systems can be configured in a similar way, and we have also seen them set themselves like this as default.)

Best practices for folder backups are to keep multiple backup sets, just as with the database backups – simply keeping an extra copy on the hard drive is better than no copy but does not adequately protect against viruses, hard drive failure, etc. For example, an airtight system is to do a weekly server backup, a daily cloud backup, and a daily external backup (external drive/NAS/SAN/etc.). We realize it may not be financially practical for all companies to use this method, and are not recommending spending money the company does not have, but using the best multiple-backup method the company can afford is absolutely in their best interest – the more sets of backups they have, the more secure their data is against an IT disaster.

How to Test the Integrity of a Backup

Currently, we recommend creating a practice database not only for the ease of training of employees, but for the testing of backups. If the company does not possess the document “How to Make a Practice Database”, please download it from our website or contact RFMS at help@rfms.com.

This same document can also be used to make a third database and folder used explicitly for testing if the company desires unlimited flexibility for training and testing and has the resource capabilities to handle all three.

To perform basic tests for backup integrity:

- Run “dbcc checkdb” on the restored database as a query inside SQL management studio.
- Open and close each core RFMS module.
- Briefly look over recent orders in order entry to make sure they are showing up.
- Open and save an order in order entry.
- If any errors show up at any point during these tests, reboot the server, make a new backup of the original RFMS database, and try again. If the errors persist, test again using the original RFMS database to compare. If the errors *still* persist, submit a ticket to help@rfms.com for guidance.

Some additional tests that can be run for further verification:

- Close the general ledger in accounting in the test database and compare the results against the results of a soft-close in accounting in the active database to eliminate human error.
- Print a brief material analysis report.
- Print a brief management report in accounting.

Please keep in mind there are no fool-proof methods due to unpredictable variables such as hard drive errors, failing memory sticks, or other hardware faults – but these tests have been proven rigorous enough for all environments observed thus far.

How to Test an Update's Compatibility with a Company's Environment

The same idea for testing backups can be used to fully test the compatibility of an update with the company's environment.

To do so, **reboot the server**, run the update on the practice folder (or testing folder, if the company has a third folder explicitly for testing) **instead** of the active RFMS folder, then perform the tests listed below on the updated practice/test folder:

- Print PO in order entry.
- Add an internal note in order entry.
- Run a brief material analysis report.
- Have an employee perform a common task in every module if possible.
- If any errors show up at any point of these tests, please reboot the server again, re-run the update, and test again. If errors persist, please submit a ticket to help@rfms.com for guidance.

Annual SQL Database Administrator (DBA) Visit at Minimum, A Biannual Visit Is Recommended.

While generally a certified SQL DBA will do as their experience dictates alongside Microsoft Best Practices, the following is a list of ten protections against the most common SQL issues we see, and should be things the SQL DBA is able to check during their routine visit:

1. Check tables for any abnormalities, particularly if one is unusually large.
2. Run the query "dbcc checkdb" on all RFMS databases (or equivalent maintenance plan)
3. Check to see if any indexes need to be rebuilt.
4. Look at SQL connections in SQL config – see if the network can be made to run more lean and if it would benefit (i.e. use only TCP/IP instead of named pipes, or vice versa)
5. Check log file size of RFMS databases.
6. Check mdf file size of RFMS databases, make sure the company is not approaching the limits of their SQL version.
7. Make sure SQL compatibility mode is at least 2008 for all production RFMS databases.
8. Inspect the maintenance plans (if any) for all RFMS databases.
9. Make sure the latest service packs have been applied for the instance.
10. Inspect SQL server error log.

Repeat the above list for all RFMS instances in use in the environment. Keep in mind the above list is by no means comprehensive but should cover the most common issues we see and serve as a deterrent from most potential emergencies or SQL-related performance issues.

Even the most fine-tuned network will not be enough when the database itself is what is causing the issue! Please make sure to hire a qualified DBA to do the procedures in the above list. A company does not need to find one particularly familiar with RFMS – only one with the proper experience and qualifications to handle a SQL database. There should be

no issues with a qualified DBA reviewing the database, a SQL database is a SQL database.

RFMS does not keep a DBA on staff, but the company is free to contact their RSA to see if one may be available in their area that we have records of.

Annual Certified Network Analyst Visit at Minimum, A Biannual Visit Is Recommended.

While generally a certified network analyst will do as their experience dictates alongside Microsoft Best Practices, the following is a list of ten protections against the most common network issues we see, and should be things the Network Analyst is able to check during their routine visit:

1. Check connection speeds across network – for optimal RFMS performance, all PC connections should be a gigabit.
2. Replace any NIC's that are failing or beginning to fail.
3. Do the same for any bad cables or cables that are beginning to go bad.
4. Evaluate the integrity of the switch – are any ports going bad? Is the switch itself reliable?
5. Evaluate the compatibility of network hardware with environment.
6. Evaluate the security of the network.
7. Run a network scan to check for extraordinary Round Trip Times (RTT) for any particular machine.
8. Check ODBC and Cliconfg connections of problematic workstations – are they still using a connection to an old server and having to fail over each time to the new one?
9. Run reports against the fastest machines versus the slowest machines – ask employees with the fastest machines about the baseline screen refresh time estimates posted on rfms.com.
10. Evaluate connections between servers.

Keep in mind the above list is by no means comprehensive but should cover the most common issues we see and serve as a deterrent from most potential emergencies or network-related performance issues.

Please keep in mind that while RFMS is available for contact during these visits, we can only answer compatibility questions in a general capacity (questions such as “do you recommend this particular model Cisco switch?” “Do you recommend this particular model SAN to run RFMS off the network?” are not things we can answer. We also cannot answer any questions from a security standpoint.)

Baseline Estimates, SQL Server Specifications

Based on information from our Quality Assurance department, we have published some approximate expected load times for a given order in order entry for use as a baseline, given that the client is running at least RFMS version 15.1.2. We would like to also note that it is possible, though uncommon for it to run up to twice as fast as these baseline estimates. These estimates are found on our website in the following article:

<https://rfmsinc.zendesk.com/hc/en-us/articles/115012732608-Best-Practices-for-Performance-Backups-and-Data-Integrity>

Please keep in mind before reading our SQL Server Specifications – they are subject to change much as the features of our programs change and the features of SQL change and the insides of Operating Systems change and the bandwidth requirements of third-party software change, etc.

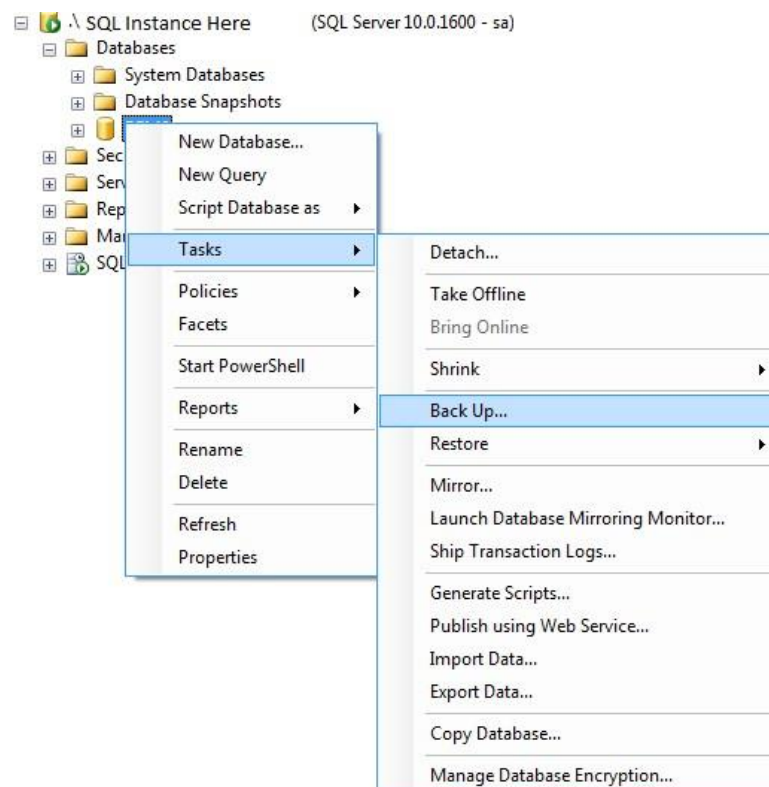
We recommend staying within Microsoft’s intended lifecycle of a product not just for security but for the ability to perform as intended.

Our SQL server specifications document can be found here: [RFMS SQL System Specifications](#)

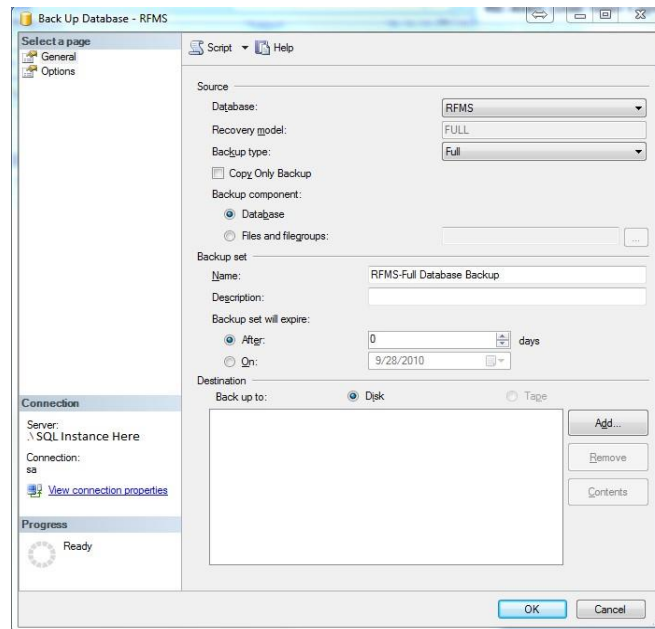
SQL Manual DB Backup / Restore

Manual Backup of SQL Database (Example)

1. Go to the SQL Server Management Studio. From there select “connect” when prompted, making sure that you have the correct name of the server in the box.
2. Expand Databases and the right click on the database to backup. Select “tasks” and “backup”

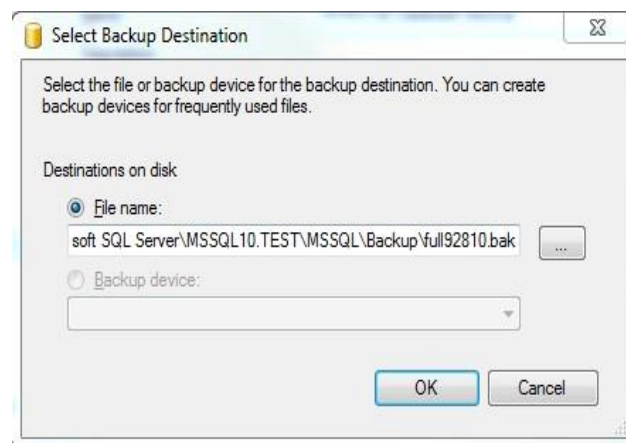


3. On the next screen you will see the backup options menu. Select the Database (which should default to the database selected in step 2). Choose the following:
 - Backup type = Full
 - Backup set name = should default, but can change this

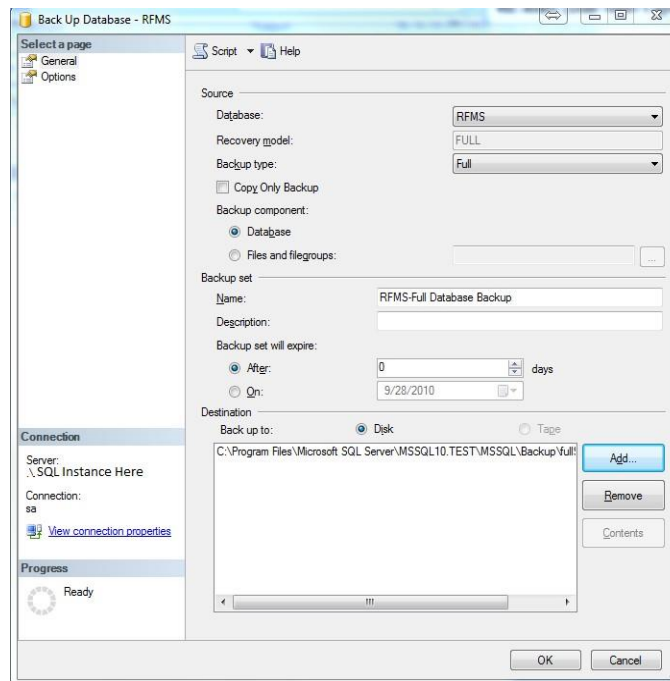


Note: If the “Destination” Section contains information, highlight the line and select “Remove”

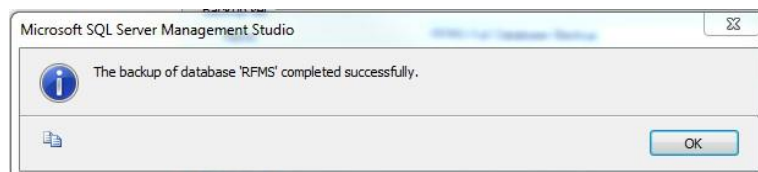
4. Select “Add” under the “Destination” Section. A screen like below will display. Make sure to scroll to the end of the line and then add a name for the backup file with the extension of .bak and hit “ok”.



5. A Screen like below will display, if all is correct select “ok” to continue



6. When the backup has completed, select “ok” to finish the process.



Manual Restore of SQL Database

Your Local Computer Technician should perform these steps, since it deals with restoring a database file from another source. Failure to do this process correctly can result in Data Loss. RFMS is not responsible for performing daily backups, restores, maintaining the backup schedule, or performing integrity checks of the tapes or Backups.

Archiving a SQL Database

This section is to assist your IT Professional in making an Archive of your Current RFMS SQL Database & contains the steps required for your IT Professional to complete this process. It is imperative that no one be in RFMS while this is being done and that you have a good backup of your RFMS Folder and database prior to performing this

document. Failure to perform this document correctly can result in a corrupt RFMS Database and/or loss of data.

Note: Archiving a SQL Database essentially puts two SQL Databases on your Server. This means that SQL will utilize more memory than was being originally utilized. Make sure that you have enough memory to support this operation. If running SQL Express, the limit for the SQL Databases would be 1 GB Total.

1. Make sure everyone is out of RFMS.
2. Obtain the fully qualified SQL Server Name. This is located at the bottom of the RFMS Navigator in format of Server Name – Database Name
3. At the server, backup your RFMS Database and move to the New Server / Location (see Manual Backup of SQL Database Section of SQL RFMS – Manual DB Backup and Restore Document).
4. Restore the backup made in step 3 to a new DB (see Manual Restore of SQL Database Section of SQL RFMS – Manual DB Backup and Restore Document).

Note: When doing step 4, make sure to input a db name that is not currently on the Server

5. Make a copy of the RFMS folder and place this in another area on the server or move to New Server (separate from the Real RFMS Folder). Give the copy a similar name to the database name.

Note: If moving the db to another Server, make sure to install SQL in mixed mode and provide an SA Password

6. Set up sharing and permissions on the Archive Folder for those that need access to this folder.
7. Rename the dbconnect.tps and dbconnect.xml (if present) within the Archive folder.
8. Locate the RFMSNav.exe inside the Archive Folder and launch to test. When prompted for the Server and Database Name, use the Server Name from step 2 and the database name that you created in step 4. Make sure Archive RFMS is Archive DB and Real RFMS is the Real DB.

Creating an Archive Icon

Make or locate the new RFMS Archive folder on your server. Make sure to share this folder and assign full control under the security tab to those users that need to look at this data set.

Right click on the icon for the RFMSnav.exe and choose copy. Then right click on the desktop and select Paste.

Rename the new icon to Archive RFMS. Right click on this newly created icon and go to properties. Change the start in box to read P:\rfms\archive and hit ok. (**Note: P is the mapped drive to your archive folder.**)

When you launch the program it will ask the server name, which is the name of the SQL Server. The database name will be Archive or whatever you used as the name of the Archive Database.

How to Setup a Test and Practice Environment

This section will go over the process of making an RFMS practice database. This process also gives the company a way to test SQL backups to make sure they are working as intended, and this also gives the company a safer way to test updates as this will be completely separated from their active database and active RFMS folder once completed.

This process should be done with everyone out of RFMS.

First, log into the SQL Management Studio at the server and make a backup. At the backup screen, remove the default location and pick a place that will be easy to find. While it is convenient if it lets one save to the C root, often times an access denied error can occur, so it is best to save it somewhere else such as an external drive for example.

Click OK, execute the backup on the original window, then right click “Databases” in the object explorer and go to Restore Database.

By default, this restoration process tries to overwrite an existing database, so please be sure to change the Destination field to Practice first (in the first window) and then double check it when the restore has been configured before clicking OK.

The General, Files, and Options tabs *all* need to be configured correctly in order to create a new backup with this method.

Next go to the Files tab and name these files. First, check the box that says “Reallocate all files to folder”.

Expanding the columns works just like Microsoft excel – scroll to the end of the column, click and drag the end of the column out to expand it. (This isn’t necessary, but makes it easier to edit)

Then, name the files the same as the destination so that it will be easy to find in case it is needed later. In this example, both the mdf and ldf are just “PracticeRFMS” so it would be PracticeRFMS.MDF and PracticeRFMS.LDF.

Once this has been done, just check the boxes on the next screen that say “Overwrite the existing database (WITH_REPLACE)” and “Preserve the replication settings (WITH_KEEP_REPLICATION)” and go back to the first screen to double check the destination. Make sure the destination is Practice!

If General, Files, and Options have been configured correctly to this point, click OK – once the process completes there should now be a practice database showing up in the object explorer.

Next, make a new folder and point it to the new practice database. To do this, copy the active RFMS folder, paste it next to the RFMS folder, and name the copy “RFMS Practice”.

When this has been done, go into the folder and find the file named “dbconnect.tps” and delete it from the folder (This can also be renamed if the company wants to archive the tps file, as it will no longer be visible to the RFMS program once renamed.)

After this has been done, run rfmsnav.exe.

It will prompt for server credentials – type them in in the format of “Server\instance” and then the database name.

There should now be a usable practice company – to connect workstations to it, use a mapped drive for the RFMS practice folder or use UNC to create shortcuts to rfmsnav.exe and relevant add-ons.

Considerations for Purging

It is the position of RFMS that purging is unnecessary and can expose your data integrity to certain risks.

With the current hardware offerings, disk space etc. should not be an issue. We recommend increasing hardware capacity to accommodate data growth rather than purging.

Purging can create unanticipated results. Often times a cutoff date is requested, for instance 2005. The purge is run only to find out later (after restoring is not an option) that 2 old orders from 2005 did not purge because of receipts or any number of other date related components. Purging can also create issues with inventory, such as recreated records.

Data Backup/Archive Information on RFMS Website

- <https://rfmsinc.zendesk.com/hc/en-us>
- <https://rfmsinc.zendesk.com/hc/en-us/articles/218331797-Backup-Message-in-Order-Entry>
- <https://rfmsinc.zendesk.com/hc/en-us/articles/115012732608-Best-Practices-for-Performance-Backups-and-Data-Integrity>
- <https://rfmsinc.zendesk.com/hc/en-us/articles/202360267-SQL-Manual-Database-Backup-Restore>
- <https://rfmsinc.zendesk.com/hc/en-us/articles/201981626-Archive-Outline>
- <https://rfmsinc.zendesk.com/hc/en-us/articles/202361997-Creating-an-Archive-Icon>
- <https://rfmsinc.zendesk.com/hc/en-us/articles/115012573387-How-to-Setup-a-Test-and-Practice-Environment>
- <https://rfmsinc.zendesk.com/hc/en-us/articles/206828017-Copying-Data-from-your-live-RFMS-database-to-your-practice-RFMS-Database->

RFMS is not responsible for performing daily backups, maintaining the backup schedule, performing integrity checks of the tapes/jobs, or running integrity checks on databases or backups.