



Frequently Asked Questions (FAQs)
VAULT400 iSeries (AS/400) Agent



Q: What are the key benefits of VAULT400 iSeries Agent when compared to a traditional tape-based backup solution?

A: There are several benefits of using a backup solution based on the VAULT400 iSeries Agent:

- More efficient. Every backup takes advantage of VAULT400 Delta Technology; every backup will send less data than a typical incremental backup.
- Shrink the backup window. In most cases a VAULT400 Technology backup over WAN is faster than a typical differential backup to tape.
- Parallel backups of LPARs. Concurrent backups of LPARs on the same machine reduce both backup window and the cost of backup solution.
- Easier restores. Every restore is performed from a full backup image; no need to worry about restoring full and incremental or differential backups.
- Automatically off-site. Every backup is off-site as soon as it completes.
- Secure. Both backup data and connection to the remote Vault is encrypted.
- Small storage footprint. VAULT400 Delta Technology allows for a very efficient storage of backups.
- Flexible. Restore to different iSeries hardware model when testing or performing Disaster Recovery (e.g. model 810 running V5R2 to model 270 running V5R2)

Q: What operating system version(s) does the VAULT400 iSeries Agent support?

A: VAULT400 iSeries Agent version 5.3 supports V5R1, V5R2 and V5R3. Note that the IBM maintenance agreements specify that the client must keep the OS levels current in order to receive IBM support.

Q: What is the license pricing based on?

VAULT400 iSeries Agent pricing is a flat price for all iSeries tier levels and an (ALF) annual license fee. Example: VAULT400 does "not" charge an upgrade fee when migrating from IBM Processor tier groupings.

Q: Can I use the VAULT400 iSeries Agent to perform bare metal recovery?

A: Yes, bare metal restores are supported. A recent SAVSYS tape is required to recover the basic operating system including licensed programs. VAULT400 Agent recovers all remaining system components, security data and application and user data. The detailed recovery steps are documented in the VAULT400 iSeries Agent User Guide (section 3.4).

Q: What type of data protection is VAULT400 iSeries Agent providing?

A: The iSeries data protection world is segmented into two main categories; tape backup and mirroring solutions. Mirroring solutions for iSeries are very expensive; typical mirroring system still requires a backup in order to recover from logical corruption such as file deletion or erroneous modification. Tape backup solutions have all of the well-known issues experienced on other platforms including being labor intensive, error prone, slow when used as an off-site solution, expensive when used in distributed environments. **VAULT400's iSeries Agent provides the first "IBM Server Proven" backup solution that provides benefits of an automated, off-site, encrypted and fast backup at a fraction of the cost of other solutions.** Most customers implement VAULT400 iSeries Agent to displace their tape backup product. A number of customers leverage the features of the Agent to shorten the RTO (Recovery Time Objectives) for their hot-sites at a fraction of the cost of a mirroring solution.

Q: How does the VAULT400 solution compare with Tivoli?

A: Extremely well. VAULT400's on-line recovery and backup solution is built to support large, distributed environments. Quote from IBM: "You can use BRMS to save low-volume user data on distributed iSeries systems to any Tivoli Storage Manager (TSM) server." Tivoli for iSeries emulates



a tape device. For example if your nightly backup is 500GB, then 500GB needs to go across the network every night. With VAULT400's Delta Technology the Agent only sends compressed block level changes. Utilizing VAULT400 - 500GB of iSeries data typically requires only 1GB of data transmission over the network. Additionally, a typical Tivoli server would require 14TB (28 multiplied by 500 GB) in order to host the standard Grandfather-Father-Son retention (mix of daily, weekly, monthly and yearly backups). To achieve the same level of protection with the help of the VAULT400 solution, the footprint is normally less than 500 GB thanks to efficiency of VAULT400 Delta Technology and compression technologies.

Q: What is required for the VAULT400 iSeries Agent to work when performing a recovery? Do I need BRMS/400or Media and Storage Extensions LICPGM?

A: All that is required is a bare OS with properly configured TCP/IP. BRMS or Media and Storage Extensions are not required for any functionality of the VAULT400 iSeries Agent.

Q: Do I need to use SAVSYS?

A: Yes. SAVSYS is required to perform IPL (boot) from failed system. SAVSYS is usually less than 4GB, it is very static and only requires being updated when PTF are loaded. Most customers are loading PTFs once a month or once a quarter. The SAVSYS contains the latest PTFs, which were applied to the system, so this is the fastest way to recover the bare OS. Note: SAVSYS can be done by either running SAVSYS command direct or by using option 22 from the save menu. Note that option 22 differs from SAVSYS as it also saves all IBM licensed programs. The Agent is capable of saving IBM license programs. If the Agent is used to backup licensed programs, we recommend using SAVSYS directly to avoid unnecessary duplicate backups.

Q: Can I perform hardware independent restores with the help of VAULT400 iSeries Agent?

A: The restore procedure from a full system loss will be similar to the recovery process on other platforms supported by VAULT400. First the system and base OS need to be rebuilt. Then TCP/IP needs to be installed if not part of the base OS rebuild. Then the VAULT400 Agent is installed and synchronized with the Director Vault (or QuickShip Vault). Finally, the task can be restored. You can restore the data and programs from one machine to a different model machine as long as you have enough disk space and as long as you restore on the same or newer version of the OS. You can't restore from V5R2 to V5R1 but you can restore V5R2 to V5R2 or to V5R3.

Q: How is the software portability maintained on iSeries systems?

A: One of the key features of the iSeries systems is that any software that works on the smallest system will also work on the most powerful model. IBM maintains the compatibility between the operating system and the hardware. All programs are converted to a generic machine code before being interpreted by the microcode layer of the hardware. Thus, even old RPG programs from 1980 will still run on an iSeries machine today without modification.

Q: What objects are installed on their machine after the VAULT400 iSeries Agent is installed?

A: The following are installed:

- Product Library – named BUAGENT
- Product Directory – named BUAGENT
- Subsystem – named AGENT
- User Profile – named AGENT



Q: Does the iSeries Agent backups run interactively or in Batch?

A: The backups run in Batch. Upon installation VAULT400 Agent will add a subsystem named "AGENT". All backups will run under this subsystem.

Q: What are the common file types on the iSeries?

A: Many objects that reside on an iSeries machine have a type designation of *FILE. Attributes are used to define file types. Although there are many kinds of files, there are some files that are more common than others. For IFS, there are stream files (STMF); such as a stream file called Monday.vpb, which would contain backup information for a particular task on the iSeries Agent. For DMS, there are:

- Physical files (PF) which store data.
- Logical files (LF) which sort physical file data
- Source physical files (PF-SRC) which can hold physical files and logical files.
- Save files (SAVF), which are repositories for saved objects.
- Display files (DSPF) that are screens for providing information.
- Print files (PRTF) with criteria for printing output.
- Message files (MSGF) for storing messages to be used for display purposes.

Q: What are the data types that VAULT400 iSeries Agent can backup?

A: From the backup tasks option the user can define 3 different types of data to include in the backup.

- OBJ – Libraries and objects in native system
- IFS – Folders and stream files in the Integrated File System
- SYS – System State

Q: What System State information are we backing up in a SYS task?

A: The SYS task contains system security data (SAVSECDTA), configuration objects (SAVCFG), and system values (WRKSYSVAL *ALL)

Q: Can a System State (*SYS) restore be done from a terminal session or does the machine have to be in a "Restricted State"?

A: A System State (*SYS) restore must be done from the iSeries console in a "Restricted State". Note: The user doesn't need to put the machine in a restricted state manually. If the Agent is run from the server console, the application will put the server in a restricted state automatically and then proceed with the system restore.

Q: Does the Agent backup the entire Library, or does it have the ability to backup individual files or objects?

A: We can backup either the entire Library or the individual object(s). VAULT400 Agent is calling the SAVOBJ command where you can list a library or all of the individual objects you want saved.

Q: Can I restore an object to a different Library?

A: Yes, you can restore an object to a different library. Upon a restore, after the data is sent back to the iSeries we call the OS/400 RSTOBJ command, where you can restore to the original source library, or a different one.

Q: Does the Agent support backup of DLO?

A: No, currently the VAULT400 Agent does not support DLO. DLO is an older, pre-IFS, "folder" style data access. If there is not much data within the DLO then task can be configure with a pre command to save the DLO to save file and then the task can backup the save file to the Vault. This method will not take advantage of VAULT400 Delta Technology. We are tracking customer interest



for native DLO support. Please contact VAULT400 Support if you are interested in purchasing iSeries Agent with native DLO support.

Q: Can I backup spool files with the Agent?

A: No, currently the VAULT400 Agent does not support backup of spool files. We are tracking customer interest in spool file backup. Please contact VAULT400 Support if you are interested in purchasing iSeries Agent with support for spool file backup. Note: the base OS doesn't support backup of spool files.

Q: I have customers that have IXA attached xSeries servers - does the Agent support the saving and restoring of server storage spaces?

A: The IFS folder /QFPNWSSTG contain the raw objects to the network storage spaces. The storage spaces appear as regular stream files and thus an IFS task can be setup to backup these objects. Note that VAULT400 does not support hot backup of IFS, so the IXA system has to be shutdown prior to backup. For best performance and to take advantage of quick file scanning it is recommended to install the Windows / Linux agent in the IXA environment and backup the data directly that way.

Q: Can the Agent save guest operating system partitions for example Linux?

A: If the Linux partition uses virtual disk then the disk space is created the same as above in /QFPNWSSTG and then the Linux partition can be backed up using IFS task. However, if the Linux partition uses dedicated disk drives then the Agent will have access to that partition. This is so because LPARs on the

iSeries are implemented very close to the hardware and direct disk drive access across LPARs is restricted. One work around is to create NFS share in Linux quest partition, which can be mounted in IFS on iSeries partition. In that configuration the Linux data can be backed up across the NFS share. LPARs support virtual network so there should be no overhead on the existing network to backup across NFS. To backup partitions that contain AIX, VAULT400 recommends VAULT400 Agent for AIX. This Agent may be installed within the AIX environment and the data backed up as if it is a standalone system.

Q: What management interface does the Agent offer?

A: VAULT400 iSeries Agent offers a 5250 terminal emulation, menu-driven management interface. The terminal interface is sometimes referred to as the "green screen." The current version of the VAULT400 iSeries Agent does not support a connection from the VAULT400 Agent "GUI" Console.

Q: Can I run the VAULT400 Agent in parallel with a standard Save/Restore based backup product?

A: Typically, customers use SAVCHGOBJ during the week and do full backups on weekends. Basically, the SAVCHGOBJ works similar to VAULT400's quick file scan so that only changed objects since the last backup are backed up and re-stamped with current date and time. As a result, this will impact VAULT400's quick file scanning capability. However, we did implement the system parameter "Update History" so if the customer sets Update History to NO on the Vault task and runs the VAULT400 task before SAVCHGOBJ then the two systems could be used together. Note: Backups of the same data must not overlap in order to prevent object locking.

Q: How does VAULT400 handle backup of open files?

A: The VAULT400 Agent can use one of three methods to backup open files on iSeries.

- The backup of individual "open" objects via a system API referred to as "Save While Active." Note: Most application databases must maintain consistency across multiple objects. Therefore, this method is not feasible on systems that are active at the time of the backup.



- Journaling – The VAULT400 Agent supports iSeries journaling, a well-known method of backing up open objects on the iSeries. Journaling allows significant level of flexibility when recovering. See section 3.3.1 of the User Guide for more details on journaling based backups with VAULT400 Agent.
- Triggers – Trigger based backups allow creation of consistent view across objects without the overhead of journaling. By attaching triggers to objects, the operating system tracks the change to each object while the backup was running. During restore, each of the objects is returned to the way they appeared at the beginning of the backup. (See section 3.3.2 of the Users Manual on how to configure Triggering)

Q: How do we schedule the iSeries Agent backup tasks to run?

A: Scheduling of backups is supported directly from the iSeries Agent management interface. Scheduled backups are submitted to OS/400's Job Scheduler (Add Job Schedule Entry (ADDJOBSCDE)).

Q: What is the backup performance on iSeries?

A: Throughput - The backup throughput of an entry-level iSeries systems (under 300 CPW) has been in the 4 – 6 GB per hour per backup task. This compares favorably with backups with our Agents on platforms supported by VAULT400. Throughput scales well within the power rating on the system. Size- Most of the data on an iSeries machines is stored in the DB2 databases. VAULT400 provides an excellent compression performance on DB2 objects.

Q: Does VAULT400 support cross-platform restore of iSeries data? Can I restore some data from an iSeries to Windows or UNIX system?

A: Presently, VAULT400 does not support cross-platform restore on iSeries.

Q: Can I use BRMS' "hot backup" feature to backup a Domino server to save file and then backup the save file using the VAULT400 Agent?

A: Though technically possible, VAULT400 does not recommend this option. A save file is similar in behavior to a zip file. Every time it is recreated in such a way that VAULT400 Delta Technology will see the contents of the file as completely new, essentially reseeding the file every time. If your Domino server is relatively small (~1GB), then this solution might work. VAULT400 recommends stopping the Domino server prior to backup and restarting it after backup completes. This can be accomplished with the Pre/Post backup commands.

Q: Can CLP program be called from Pre/Post commands?

A: Yes, you may call any type of user written program.

Q: What will the Agent do if a Pre/Post CLP program fails?

A: For the VAULT400 iSeries Agent version 4.7, errors from Pre/Post commands are logged in the log file but the backup continues. In versions 5.3 and later failure of the Pre command will cause the backup not to run; failure of Post command will log the backup as failed even if the backup portion was successful.



Q: Can the Agent work in restricted system state?

A: No, because in restricted state all subsystems including TCP communications are ended thus communication to the Director (Vault) would not be possible; However, to “simulate” restricted state a user may end all subsystems, excluding the AGENT and QSYSWRK subsystem. To prevent users further from access the system the TCP services can be ended with ENDTCP SVR *ALL and ENDDHOS TSVR *ALL.

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