



FREQUENTLY ASKED QUESTIONS

DataGuardian™ iSeries

1. What are the key benefits of DATAGUARDIAN iSeries when compared to a traditional tape-based backup solution?

There are several important benefits when using the DATAGUARDIAN iSeries tapeless backup solution from IPR International, key among them are:

- **Efficiency** - Every backup takes advantage of Delta processing, which captures only the new or changed data during each backup event, so that less data needs to be captured and transmitted to the offsite data vault than a typical incremental backup.
- **Shorter Backup Windows** - In most cases backup over WAN is faster than a typical differential backup to tape because of the Delta processing, so the backup takes less time.
- **Parallel backups of LPARs** - Concurrent backups of LPARs on the same machine reduce both backup window and the cost of the backup solution.
- **Easier restores** - Every restore is performed from a full backup image; no need to worry about restoring full first and then the incremental or differential backups.
- **Automatically stored off-site** - Every backup is transmitted to and IPR off-site data vault as soon as it is completed.
- **Higher Levels of Security** - Backup data is encrypted in transit and while in storage.
- **Small storage footprint** – DATAGUARDIAN iSeries allows for a very efficient storage of backups.
- **Flexibility** - Restore to different iSeries hardware model when testing or performing Disaster Recovery (e.g. model 810 running V5R2 to model 270 running V5R2).

2. What operating system versions does DATAGUARDIAN support?

DATAGUARDIAN iSeries version 5.32 supports iSeries V5R1, V5R2, V5R3, and V5R4 platforms.

3. What is DATAGUARDIAN iSeries pricing based on?

There are three components:

- (1) **One time license fee.** The license fee is based on the system's power rating expressed in Commercial Processing Workload (CPW) units. Systems with similar CPQ rating are grouped into "power levels." There are currently seven power levels on iSeries systems from P5 for entry level systems to P60 for top of the line models.
- (2) **Setup and Training Fee.** Setup and training includes (a) software implementation and configuration, (b) capturing the initial "seed" of data, and (c) training. Setup and Training Fees are not based on CPW units.
- (3) **Monthly service fee.** The Monthly fee based on the amount of data protected, or clients may elect to contract for a fixed amount of storage capacity. Monthly Service Fees are not based on CPW units.

4. Can I use the DATAGUARDIAN iSeries to perform bare metal recovery?

Yes, bare metal restores are supported. A recent SAVSYS tape is required to recover the basic operating system including licensed programs. DATAGUARDIAN recovers all remaining system components, security data and application and user data. The detailed recovery steps are documented in the DATAGUARDIAN iSeries Users Guide and explained during training.

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5. What type of data protection is DATAGUARDIAN iSeries providing?

Traditionally the iSeries data protection world is segmented into two main camps: 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 offsite solution, expensive when used in distributed environments.

The DATAGUARDIAN iSeries Solution provides the first “IBM Server Proven” backup solution that provides the benefits of an automated, offsite, encrypted electronic backup at a fraction of the cost of other solutions. Most clients deploy the DATAGUARDIAN iSeries solution to **displace their cumbersome tape backup product**. A number of clients leverage the features of DATAGUARDIAN to shorten the RTO (Recovery Time Objectives) for their hot-sites at a fraction of the cost of a mirroring solution.

6. How does the DATAGUARDIAN iSeries solution compare with using Tivoli?

Extremely well! DATAGUARDIAN iSeries is built to support large, distributed environments whereas Tivoli is not. As stated by 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 you have 500GB of data, then, with Tivoli, 500GB needs to go across the network every night. Using DATAGUARDIAN’s delta processing technology, only the compressed block level changes or additions need to be backed up each night. Thus, to backup 500GB with DATAGUARDIAN iSeries solution, typically only 1GB of data needs to be sent over the network.

Additionally, a typical Tivoli server would require 14TB (28 multiplied by 500GB) 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 DATAGUARDIAN solution, the footprint is normally less than 500GB thanks to efficiency of delta processing and compression technologies.

7. What is required for DATAGUARDIAN to work when performing a recovery? Do I need BRMS/400 or Media and Storage Extensions LICPGM?

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 DATAGUARDIAN iSeries to work.

8. Do I need to use SAVSYS?

Yes. SAVSYS is required to perform IPL (boot) from a failed system. SAVSYS is usually less than 4GB, it is very static and only requires being updated when PTF are loaded. Most clients 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. 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. DATAGUARDIAN is capable of saving IBM license programs. If DATAGUARDIAN is used to backup licensed programs, we recommend using SAVSYS directly to avoid unnecessary duplication.

9. Can I perform hardware independent restores with the help of DATAGUARDIAN iSeries?

The restore procedure from a full system loss will be similar to the recovery process on other platforms supported by DATAGUARDIAN. 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 DATAGUARDIAN agent is installed and synchronized with the QuickShip Mobile 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 cannot restore from V5R2 to V5R1, but you can restore V5R2 to V5R2 or to V5R3.

10. How is the software portability maintained on iSeries systems?

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.

11. What objects are installed on their machine after DATAGUARDIAN iSeries is installed?

The following are installed:

1. **Product Library** - named BUAGENT
2. **Product Directory** - named BUAGENT
3. **Subsystem** - named AGENT
4. **User Profile** - named AGENT

12. Does the DATAGUARDIAN *iSeries* backup run Interactively or in Batch?

The backups run in Batch. Upon installation, DATAGUARDIAN will add a subsystem named "AGENT". All backups will run under this subsystem.

13. What are the common file types on the *iSeries*?

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.

14. What are the data types that DATAGUARDIAN *iSeries* can backup?

From the backup tasks option, the user can define three 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

15. What System State information are we backing up in a SYS task?

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

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

A System State (*SYS) restore must be done from the *iSeries* console in a "Restricted State".

Note: The user does not need to put the machine in a restricted state manually. If DATAGUARDIAN is run from the server console, the application will put the server in a restricted state automatically and then proceed with the system restore.

17. Does DATAGUARDIAN backup the entire Library, or does it have the ability to backup individual files or objects?

DATAGUARDIAN *iSeries* can backup either the entire Library or the individual object(s).

DATAGUARDIAN is calling the SAVOBJ command where you can list a library or all of the individual objects you want saved.

18. Can I restore an object to a different Library?

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

19. Does DATAGUARDIAN support backup of DLO?

No, currently DATAGUARDIAN *iSeries* does not support DLO. DLO is an older, pre-IFS, "folder" style data access. If there is not much data within the DLO, a DATAGUARDIAN *iSeries* backup job can be configured with a pre command to save the DLO to save file and then the job can backup the save file to the Vault. **Note:** This method will not be able to take advantage of delta processing because data will appear as new data each time the pre command is executed.

20. Can I backup spool files with DATAGUARDIAN *iSeries*?

No, currently DATAGUARDIAN does not support backup of spool files. Note: the base OS doesn't support backup of spool files.

21. I have IXA attached xSeries servers - does DATAGUARDIAN support the saving and restoring of server storage spaces?

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 **DATAGUARDIAN** 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.

22. Can DATAGUARDIAN save guest operating system partitions, for example Linux?

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 **DATAGUARDIAN** 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 guest 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 supports virtual network so there should be no overhead on the existing network to backup across NFS. To backup partitions that contain AIX, IPR recommends the **DATAGUARDIAN** Agent for AIX. This Agent may be installed within the AIX environment and the data backed up as if it is a standalone system.

23. What management interface does DATAGUARDIAN offer?

DATAGUARDIAN iSeries offers a 5250 terminal emulation, menu-driven management interface. The terminal interface is sometimes referred to as the "green screen." The current version of **DATAGUARDIAN** iSeries does not support a connection from CentralControl.

24. Can I run DATAGUARDIAN iSeries in parallel with a standard Save/Restore based backup product?

Typically, most clients use SAVCHGOBJ during the week and do full backups on weekends. Basically, the SAVCHGOBJ works in a similar way to **DATAGUARDIAN**'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 **DATAGUARDIAN**'s quick file scanning capability. However, the system parameter "Update History" has been implemented so if the client sets "Update History" to "NO" on the Vault task and runs the **DATAGUARDIAN** 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.

25. How does DATAGUARDIAN handle backup of open files?

DATAGUARDIAN can use one of three methods to backup open files on iSeries.

1. 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.
2. Journaling - **DATAGUARDIAN** iSeries supports journaling, a well known method of backing up open objects on the iSeries. Journaling allows significant level of flexibility when recovering.
3. Triggers - Trigger based backups allow creation of a consistent view across objects without the overhead of journaling. By attaching triggers to objects, the operating system tracks the changes 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.

26. How do we schedule the iSeries backup tasks to run?

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

27. What is the backup performance on iSeries?

Throughput - The backup throughput of an entry level iSeries system (under 300 CPW) has been in the 4 - 6GB per hour per backup task. This compares favorably with backups with IPR's other backup solutions on platforms currently supported by IPR. Throughput scales well with the power rating on the system. **Size** - Most of the data on an iSeries machines is stored in the DB2 databases. IPR observed very good delta processing and compression performance on DB2 objects, well within the 2% daily rate of change.

28. Does IPR support cross-platform restore of iSeries data? Can I restore some data from an iSeries to Windows or UNIX system?

Presently, IPR does not support cross-platform restore on iSeries.

29. Can I use BRMS' "hot backup" feature to backup a Domino server to save file and then backup the save file using DATAGUARDIAN iSeries?

Though technically possible, IPR 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 the delta processing feature will see the contents of the file as completely new, it essentially causes a reseeding the file. If your Domino server is relatively small (~1GB), then this solution might work. IPR recommends stopping the Domino server prior to backup and restarting it after backup completes. This can be accomplished with the Pre/Post backup commands.

30. Can CLP program be called from Pre/Post commands?

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

31. What will DATAGUARDIAN do if a Pre/Post CLP program fails?

For DATAGUARDIAN iSeries 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.

32. Can DATAGUARDIAN work in restricted system state?

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 from further access the system the TCP services can be ended with ENDTCP SVR *ALL and ENHOSTSVR *ALL.