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[REPLAY: RETENTION POLICY]

This guide describes the considerations you should take into account when planning to implement Replay retention policy.

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THE CONUNDRUM WITH THE STANDARD TAPE POLICY

The standard retention policy used in today's backup strategy is soon to be outmoded due to large gaps in data protection and rapid recovery. The most common of retention policy in use is a tape backup rotation called the Grandfather–Father–Son (GFS) method. GFS describes a rotation scheme whereby a daily backup (the son), a weekly backup (the father) and a monthly backup (the grandfather) are created to maintain a hierarchical backup strategy. With GFS, a full backup is performed daily. Each week, one full daily backup is promoted from a son to a father and is deemed the weekly backup. Each month, a father is promoted to a grandfather and is deemed the monthly backup. The illustration below shows the GFS schedule for backups:

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
DAILY	DAILY	DAILY	DAILY	**WEEKLY 1**
DAILY	DAILY	DAILY	DAILY	**WEEKLY 2**
DAILY	DAILY	DAILY	DAILY	**WEEKLY 3**
DAILY	DAILY	DAILY	DAILY	**MONTHLY**

WHAT ARE THE RISKS OF WITH THE GFS STRATEGY?

- An incremental or differential backup is often utilized during the week days to alleviate time constraints created by a backup window. The backup window reduces disruptions during production hours from the CPU/memory/bandwidth intensive backup operation. This creates an administrative burden to manage multiple backup tapes through the week for disaster protection. It impedes the process for a fast recovery as multiple backup jobs may be needed to locate lost data. For some configurations, this requires a new tape for each backup performed.
- The graduated weekly and monthly backups are often moved off site. This creates delays to bringing the backup tape online or worse, transportation to the location to perform the recovery process.
- Often backups only occur Monday through Friday. Large gaps to data protection exist over the weekend while the weekly backup runs.
- Protection is at risk for 24+ hours should a single backup fail to run. If a daily backup fails, then the last usable backup is from the previous day and will have no data from the day of the failure. If a weekly backup fails, then the subsequent backups are in jeopardy when incremental or differential backups are used daily. If the failure is undetected or the tape becomes damaged, the results can be catastrophic to the recovery.
- Since there is no protection of the data generated on the day that the loss occurs, this often creates a change in business practice to compensate for the lack of protection provided by the backup strategy; such as staging data in two locations.

THE REPLAY CORE RETENTION POLICY

The Replay Core retention policy is a new paradigm applied to backup retention which eliminates the risk to data protection and rapid recovery. The Replay Core retention policy allows control of how long the snapshot backups, also known as recovery points, of a protected server should be retained within the repository. When a backup retention policy is in effect for a protected server, the retention policy rollup manager automatically

retains the backup based on the policy and eliminates the backups that are older than the retention policy and therefore no longer needed for recovery. Backups that fall within the retention policy are automatically merged to form new recovery points. The retention policy rollup manager can be executed nightly or weekly to enforce the policy. By rolling up the Replay Recovery Points, there is a single source for rapid recovery.

The retention policy is continuous. As the snapshot backups are captured over time, the retention policy rollup manager keeps track of them and decides how recent backups move across the different policy containers until it ages out of the retention policy and are discarded forever. The retention policy is a set-and-forget process that controls and optimizes the space consumed by backups. The default retention policy is 1 month. The retention policy is configurable to an unlimited maximum (999 months) and as brief as 3 days.

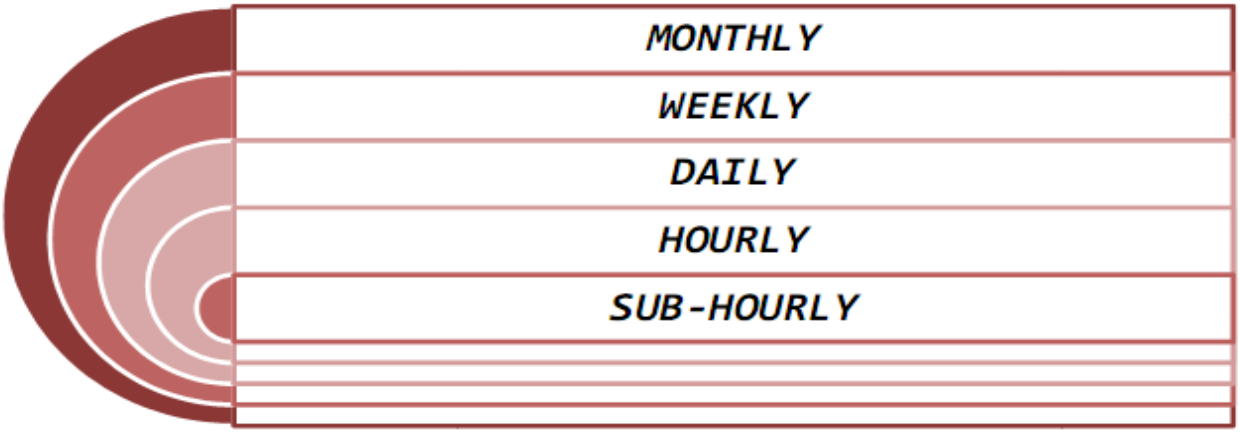
The Replay Core retention Policies includes weekend backups. The backups are near continuous with a frequency as often as every 5 minutes. With this frequency, the backup intelligently captures only new and changed data without massive probing of the volume. This eliminates the need of a restrictive and protection limiting backup window.

ADVANTAGES OF THE REPLAY RETENTION POLICY

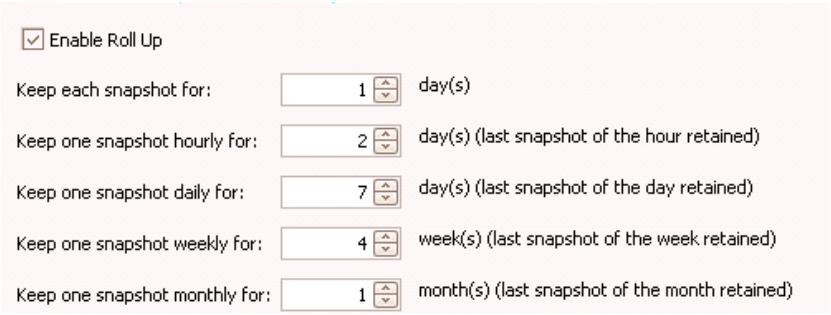
- No restrictive backup windows.
- No Administrative burden to manage a rotation scheme for backup retention.
- Rapid recovery from always available recovery points on the LAN or WAN.
- No delays or costs associated with off-site physical tape media during disaster recovery – when availability is needed the most.
- Weekend backups benefit from the near continuous protection.
- Backups are no longer in jeopardy for 24+ hour periods since the frequency of backup can be down to 5 minutes.
- Integrity checks alert administrators in the event of a failure to create a recovery point or to roll up a series of recovery points.
- Business practices can be streamlined with the confidence of greater data protection throughout the business day.

PLANNING THE RETENTION POLICY

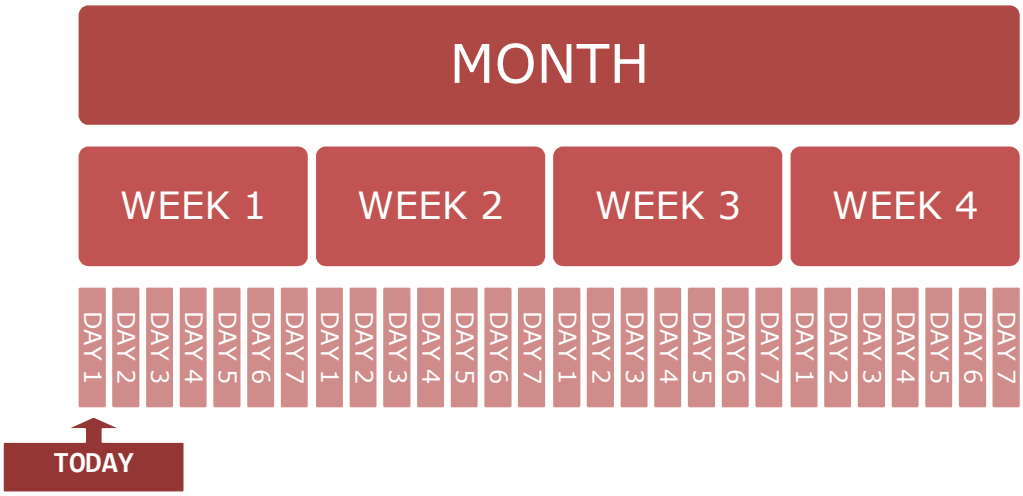
The Replay Core Retention Policy hierarchy contains the following logical containers in reverse order – Month, Week, Daily, Hourly and Sub-Hourly. Therefore, the retention policy hierarchy starts with the largest retention period the month. A month can hold 4 weeks, a week can hold 7 days, a day can hold 24 hours and an hour can hold four 15-minute quarters. Alternatively, a month can also hold 30 days; 30 days can hold 720 hours...so on so forth. The policy is best visualized using the graphic below:



To use the Replay Retention policy, start with your largest container which could be monthly, daily or hourly and then define the details of the container and its sub-containers. For non-zero values, the maximum value of each sub-container is defined by its parent container. A zero is used to override the policy on a sub-container from its parent. If you were to implement the standard GFS policy using replay, it would be configured as follows:



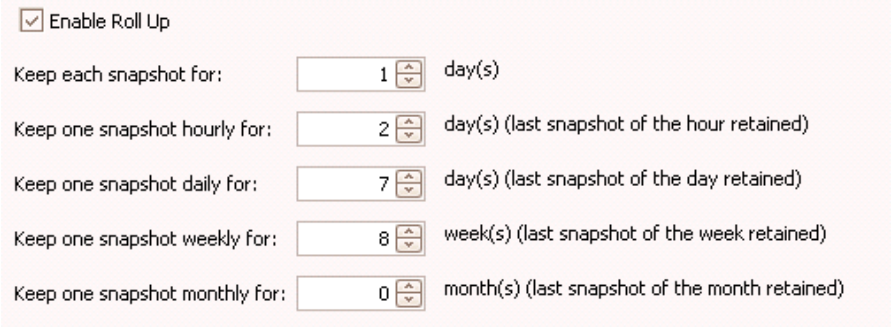
In addition to the 1 - monthly, 4 - weekly and 7 - daily backups you would also get sub-hourly and hourly for the three days after today. This is a sliding window of retention policy which allows storing backups closer to present day at a higher density and as the backup's age they are automatically become sparse till they are phased out of the retention policy.



HOW TO USE THE ZERO OVERRIDE

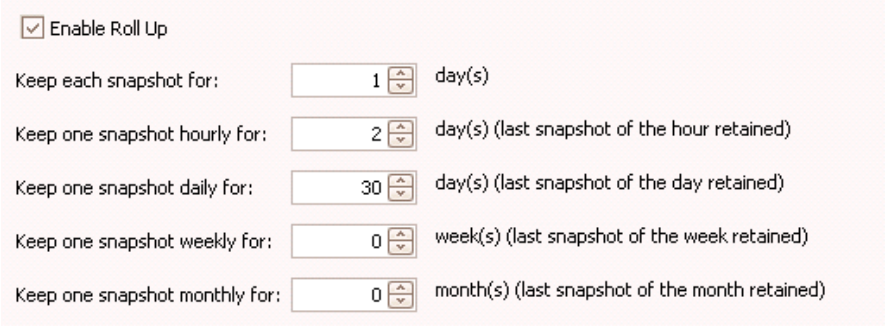
Use the zero to override the influence of a container on a sub-container which allows a sub-container to be independently configured without the limits imposed by the parent container. The following examples illustrate such configurations

1. You wish to retain only 8 weeks and no monthly.



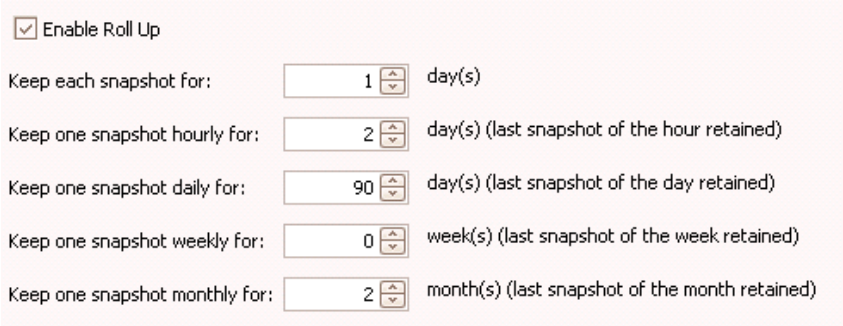
The above policy will retain 8 weekly backups and a more granular pattern for the last 3 days

2. You wish to retain only 30 daily backups.



The above policy will retain 30 daily backups and a more granular pattern for the last 3 days.

3. You wish to retain only 2 monthly, no weekly and 90 daily backups.



The above policy will retain 2 monthly and 90 daily backups and a more granular pattern for the last 3 days.