# Automatic Backup Monitoring and Reporting for HP SLS and HP ABS

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Introduction

Backups on HP OpenVMS generally comprise Rdb Management Utility (RMU)/Database backups and normal files-11, which require constant monitoring by a dedicated Operator team through the use of several live consoles running at the same time and searching for various operational messages from the backups. This not only calls for a huge cost to the customer in terms of manpower, but is also subject to human error due to the manual efforts involved.

Our solution

After careful study of the backup configuration and typical day-to-day operations of the Operator team, BKUP was designed—an out-of-box solution built on Digital Command Language (DCL). BKUP is a subset of DCL scripts with each of them intended to address the corresponding tasks performed by the Operators.

Features

- Standard solution for any customer running HP Storage Library System (SLS) or HP Archive Backup System (ABS)/HP Media, Device and Management Services (MDMS) backups on OpenVMS
- Can be installed on-the-fly without system downtime
- Real-time backup monitoring and reporting
- Cumulative backup status report at the end of each day
- Chronological log of events is maintained, which can later be referred to understand the events during the course of a backup
- Modular, highly scalable, and customizable to suit any environment
- Capable of monitoring Rdb Management Utility (RMU)/Relational Database (RDB) backups as well

Architecture overview

BKUP has the following major components:

a) A scheduler that triggers the backup monitoring routines
b) Backup monitoring scripts that perform various checks at the respective time during the course of a backup

Scheduler

The scheduler maintains a database of all the backups running on a cluster. Every day at midnight, it compiles a list of all the backups that are supposed to run for the day and creates an internal schedule of the list of various checks to be submitted for each of the backups (files-11/RMU) and triggers them at the respective time.

Monitoring routines

Monitoring routines, when triggered by the scheduler performs their intended checks and reports the anomalies to the support team through an SMTP email along with a notification via the monitoring tool (POLYCENTER Watchdog). The support team then acts upon those alerts and fixes the problems instantly.

The following figure shows how the backups can be monitored using an Operator and multiple consoles.
Figure 1: Monitoring backups using an Operator and multiple consoles
BKUP has the following major monitoring components.

**Monitoring:**

**BKUP_START_CHECK**
Checks whether the backup has started on time.

**BKUP_PROGRESS_CHECK**
Checks whether the backup has been progressing within the acceptable timelines.

**BKUP_FINISH_CHECK**
Checks whether the backup has completed on time and sends out a final status report to a dedicated server in the network for reporting. In addition, it also verifies the following:

a) Whether the backups are completed without errors  
b) Whether all the disks are backed up

**BKUP_RMU_QP_CHECK**
For RMU backups, it checks if the database quiet point is reached so that the backup can proceed without issues.

**BKUP_DRIVE_IO_CHECK**
This is a subset of BKUP_PROGRESS_CHECK and checks if the tape drive IO count is increasing consistently so as to confirm if the backup is progressing normally.

**BKUP_OPCOM_CHECK**
Monitors for any outstanding OPCOM requests that are thrown by the backups that have incurred errors, need assistance to proceed further, or waiting for a tape to be loaded.

**Reporting:**
Backup status reporting is performed by the component BKUP_CONSOLIDATED_REPORT. This component is running on a centralized system where all the backup status reports from the rest of the servers are sent at the end of BKUP_FINISH_CHECK. It compiles all the backup statuses and prepares the following HTML-based reports.

a) Daily status report with a summary of total backups ran, such as the ones that ended with various errors.  
b) History of overall statistics since the beginning of the month to date that is depicted on a pie chart.
The reports given above are sent to the support team on a daily basis to perform capacity planning, performance analysis, and for obtaining the backup statistics.

Evidence that the solution works

The tool has successfully been deployed on a couple of customers.

Competitive approaches

As per industry standards, there is no standard monitoring solution for the SLS backups on OpenVMS platform although there are other similar tools available for competing technology like IBM's Tivoli Storage Manager.

Current status

By now, the tool has undergone several enhancements and is running in steady state.

Next steps

As SLS and ABS/MDMS are common backup tools on OpenVMS platform, BKUP can be used for future customers to reduce manual time and effort and obtain high customer esteem.