Veritas NetBackup

Overview

Veritas is a major independent supplier of data protection and management software. NetBackup is the company's flagship product for enterprise data backup and recovery. NetBackup (NBU) is licensed as stand-alone software – both perpetual and subscription, and as-a-Service through partners and in the form of Veritas Alta, which is covered separately in The Futurum Group's Backup-as-a-Service research. It is also sold pre-integrated in both scale-up and scale-out physical appliances, called Flex and Flex Scale, both of which are covered in The Futurum Group's Data Protection Systems research.

Veritas positions NBU as the centralized and comprehensive backup and recovery platform for enterprises. Veritas NetBackup supports a wide range of data sources (over 800) and targets (over 1,400) for protection, making the software attractive as a single solution protecting many types of data.

Usage

Veritas NBU is typically used in enterprise environments with the software installed on master and/or media servers in a protected domain. Multiple sites can federate their backup information with catalog data shared between the NBU instances.

- Characteristics
  - Performance
    - Depends on hardware including network connections.
    - Improved performance is possible using client-side deduplication and parallel operations.
    - In AWS and Azure environments, automated autoscaling helps to meet recovery point and recovery time objectives (RPO and RTO).

Highlights

- Enterprise backup and recovery software
- Offered as physical and virtual appliances, as well as SaaS delivery
- High function, large-scale software system using master servers and media servers
- File, physical server, container, virtual machine and cloud-native resource protection
- Deduplication inline or post-processing, at source or target
- Global dedupe across multiple appliances
- Built-in snapshots and replication
- WAN optimization
- Integration with Veritas Resiliency Platform (VRP), NBU IT Analytics and Alta services (including Recovery Vault)

  - Availability
    - Highly available environments are supported with specific configurations and failover software.
  - Replication
    - Can replicate backup images for business continuity (BC)/disaster recovery (DR) with included, geographically dispersed replication.
    - Integrates Veritas Resiliency Platform (VRP) for additional BC, including automated, orchestrated DR (e.g., Microsoft Azure Stack to Azure Stack, Azure region-to-region).
- Use Cases/Implementations
  - Backup and operational recovery
  - Continuous data protection (CDP)
  - Disaster recovery (DR)
    - DR testing, documentation, automation
  - Monitoring and analytics
- System Environments
  - All major Unix, Linux, Windows operating systems, plus OS-X, OpenVMS, FreeBSD, RedHat KVM, OpenStack, and many hypervisors.
  - Kubernetes container environments
  - Multiple applications including Microsoft SharePoint, Active Directory, Exchange, SAP, Hadoop, Domino, and Documentum.
  - Native protection for Amazon Web Services (AWS), Microsoft Azure, and Google Cloud environments, and direct-to-cloud long-term retention archive tiering.
  - Self-service is available with ServiceNow and VMware vRealize plugins, as well as for IBM DB2, Microsoft SQL Server and Oracle databases.
- Deployment and Administration
  - Installation wizard provides operational simplicity.
  - Web-based GUI with wizards, logging, usage, and trend reports. Manage all NBU appliances with a single pane of glass.
  - Open virtual appliance (OVA) installable for VMware.
  - SaaS marketplace deployment available.
  - Policy-driven automation for deployment, provisioning, load balancing, cloud integration and recovery. Auto discovery of workloads.
    - Intelligent Cloud Policy Engine allows automated, tag-based discovery and the application of consistent protection policies across multi-cloud environments.
    - Dynamic autoscaling of cloud resources based on workload requirements.
  - RESTful APIs for integration with third-party workflow tools.

Analytics and reporting on anomalous activity across the NBU environment (on-premises and in the cloud).

Key Capabilities

Architecture and Deployment

NetBackup is licensed as stand-alone software – both perpetual and subscription, and as-a-Service in the form of Veritas Alta. It is also sold pre-integrated in both scale-up and scale-out physical appliances, called Flex and Flex Scale. Additionally, it is available as an AWS Outposts Ready solution.

Historically, the NBU architecture was based on a "master server" (controller)/"media server" ("workhorse" that receives data from clients being protected, and transmits that data to storage units) architecture. While having a number of benefits, including flexibility in deployment, this architecture also carried some downsides – most notably, its deployment and management complexity. As a result, effective with NBU 10, which was released in February 2022, the solution was migrated to a new architecture called Veritas Cloud Scale Technology (CST)

- In being microservices-based, the CST architecture is distributed and scalable, capable of supporting multi-petabyte environments existing on-premises and in the public cloud.
- It is shared-nothing, which inherently increases resiliency by eliminating single points of failure.
- It is elastic; composed of a collection of loosely coupled nodes that may be added or removed in a dynamic fashion as business requirements evolve. This characteristic also serves to increase resource utilization and performance.

The specific components of Veritas CST include:

- Cloud Scale Manager:
  - Central controller that is responsible for managing the cloud-hosted compute, storage, and networking.
  - Can be deployed on a variety of cloud platforms, including AWS, Azure, and GCP.
- Cloud Scale Agents:
  - Responsible for performing the backup and recovery operations.
  - Can be deployed on any type of cloud resource, including VMs, containers, and serverless functions.
- Cloud Scale Gateway:

- A proxy that sits between the Cloud Scale Agents and the NBU clients being protected.
- Responsible for translating NBU API calls into cloud-native APIs.
- Can be deployed on-premises or in the cloud.

Administration and Management

Effective with the release of Veritas CST, NBU can be controlled via a centralized management console, on a policy-driven basis. Auditing of, and reporting on, protection activities is supported, helping to identify areas where utilization and performance can be improved, as well as potential security vulnerabilities. The solution's Intelligent Cloud Policy Engine allows for automated, tag-based discovery and the application of consistent protection policies across multi-cloud environments. Additionally, intelligent data placement algorithms, enable data to be distributed efficiently across the nodes based on factors such as access patterns and performance requirements, and cloud resources are automatically scaled up and down per workload requirements. Users can provision protection resources and execute recoveries on a self-service basis, helping to streamline day-to-day management requirements.

Data Cataloging, Search and Analytics

NBU automatically catalogs all of the data that is under its protection. This data is indexed and stored in a central repository, allowing it to be searched for and located. Specifically, the product's search engine allows data to be searched for by file name, file content, creation date and other metadata-based criteria, regardless of where it is stored. From there, data can be analyzed, for example to identify usage trends and deduplication.

Backup Processes

NetBackup can be configured to use a variety of different backup and recovery policies. Customers can apply multiple service level objectives (SLOs) for a single site. For example, to a single site, customers can use backup and operational recovery for data consistency, as well as replication for site/infrastructure resiliency. Veritas provides monitoring of, and insights into, the environment to help the administrator select which recovery option to use. Currently, this feature is only supported for VMware sites, but Veritas plans to introduce the capability for additional infrastructures in the future.

Sources include block storage systems, file servers, NAS (including support for NDMP), containers, and multiple hypervisors with virtual machines. With its long history of usage in enterprises, NBU supports many different operating systems (multiple variations of Linux, versions of Microsoft Windows, UNIX systems such as AIX, HP-UX, Solaris and BSD, Open VMS, and MacOS). Multiple applications have integrated controls with NetBackup to enable coherent data protection and

management control through the application administration. Databases supported include IBM DB2, Microsoft SQL Server, MongoDB v4.2, MySQL, Oracle, and SAP.

The product also can protect cloud-native resources including Microsoft SQL, MongoDB and Oracle databases in the cloud, and SaaS applications such as Google Workspace. Native integration of OpenStack APIs is supported, as is Microsoft Azure Stack Hub.

When it comes to the cloud, NBU supports agentless, application-consistent, snapshot-based backup and recovery for AWS and Azure. The product can protect any Kubernetes distribution, and it can recover any Kubernetes environment to any Kubernetes target environment, on-premises and in the cloud. The goal is to protect from anywhere, to anywhere. The product also supports cloud archive tiers such as Amazon Glacier and Deep Archive for long-term retention, as well as multi-tier replication and automated disaster recovery in the cloud.

NetBackup 9.1 introduced "stun-free" continuous data protection for Tier 1 applications hosted on VMware. The capability uses changed block tracking and VMware's instant rollback capability to allow for customers to roll back to a specific recovery point in seconds or minutes, according to Veritas.

Important for the broad applicability of NBU are the target storage systems for protected data that are supported. In addition to the purpose-built backup appliance (PBBA) offered by Veritas, NAS systems, block storage connected to servers, Virtual Tape Libraries (VTLs), object storage systems, public clouds, and tape devices are supported. Also supported are Universal Shares, which allows customers to write directly to deduplicated storage shares. It also has an Instant Access feature, which allows users to mount and browse database images and cloud backups directly from the backup storage.

Recovery and Replication

NBU supports operational recovery from point-in-time storage snapshots, and the ability to replicate these snapshots to remote locations for disaster recovery purposes. Synchronous and asynchronous replication are both supported. Data can be replicated across multiple data centers and different platforms, including physical servers, VMs, and cloud environments. Failover can be automated, and failback operations are supported. To improve performance and reduce storage costs, WAN optimization and replication to a target that supports Veritas' Optimized Deduplication feature are supported. Replication jobs and operations are controlled and overseen by the NBU Replication Director. In addition to these features, NetBackup also supports replication using third-party replication solutions.

Data Efficiency

Performance acceleration features include client-side deduplication software, incremental backup with changed blocks only, and parallel streaming backup and restore with multiple

devices. Selected storage systems snapshot capabilities are utilized to minimize the impact on application availability during the backup process. Capacity reduction offered by NetBackup is accomplished with compression and deduplication in addition to the incremental changed block only backups. Veritas has containerized its data deduplication engine and, with Version 10, allowed it to be applied elastically through the cloud.

Encryption and Immutability

NBU supports immutability on a range of multi-cloud storage targets including AWS, Azure, Seagate Lyve clouds, and NetBackup, Cloudian and Hitachi storage platforms. Data is encrypted in flight and at rest.

Access Control

NBU supports MFA for:

- The NBU Web UI
- The Java NBU Administration Console
- NBU appliances

NBU supports RBAC for the following:

- The NBU Web UI
- The Java NBU Administration Console
- NBU clients
- NBU target storage devices

Data Vaulting

For data isolation, Veritas offers NetBackup Recovery vault, a subscription-based, air gapped storage service, as a fully managed service. It also offers NetBackup Isolated Recovery Environment, an environment that is logically and physically separated from the production and core NetBackup environments.

Significant Announcements

- 2023
  - July
    - Kyndryl and Veritas Technologies have introduced two new services, Data Protection Risk Assessment with Veritas and Incident Recovery with Veritas.

        - These services aim to help enterprises protect and recover critical data in on-premises, hybrid, and multi-cloud environments.
        - The Data Protection Risk Assessment analyzes IT infrastructure against industry best practices and identifies risks and vulnerabilities, while Incident Recovery offers fully managed cyber recovery services with AI-based data management capabilities.
        - Additional detail is available in Futurum Group's blog.
    - August
        - Partnership with the Joint Cyber Defense Collaborative (JCDC) for the development and implementation of cyber defense plans and operations for federal government, private sector, and state, local, tribal and territorial government entities.
    - October
        - Veritas adds several new capabilities for cyber resiliency and offers its Veritas 360 Defense extensible reference architecture for integration with partners' technologies, including Microsoft Defender.

Futurum Group EvaluScale – Data Protection Software

The Futurum Group product review methodology "EvaluScale" assesses each product within a specific technology area. The evaluation of each product is based on its capabilities, with capabilities for each technology segment grouped into distinct categories. For the Data Protection Software EvaluScale products are evaluated based on the following 4 criteria categories:

- Protection Environment
- Advanced Capabilities
- Cyber Resiliency
- Ability to Execute

The full Data Protection EvaluScale can be found here.

The Futurum Group Opinion and Outlook for Veritas NetBackup

Veritas NetBackup has been in market for a long time and has wide-spread usage. Given the increasing capacity demands and the pressures on IT budgets, some customers are considering alternatives to cut costs and complexities. The last several updates of NetBackup have seen the addition of capabilities such as the ability to automatically provision or deprovision thin NetBackup clients, snapshots and deduplication instances, as well as compute resources, in the cloud to balance budget and protection service level requirements. Furthermore, the availability of NetBackup as a subscription and an Alta cloud-delivered service will help Veritas to address expensive licensing charges as capacities dramatically increase, and the growing demand for data protection delivered as-a-service.

Along a similar vein, Veritas is evolving NetBackup as a more consolidated solution to address the mixture of deployment and data availability requirements, as well as the influx of cloud-native sources that need to be protected.

Data protection and availability are part of the larger Veritas product portfolio focused on helping IT organizations manage and protect their data. Other areas of the portfolio include software-defined storage solutions (including enterprise file systems and object storage), hybrid cloud data compliance and management (including archive, search, data location and information mapping), and automating data protection workflows across hypervisors, operating systems, storage arrays and cloud providers. Through Alta, Veritas has the opportunity to deliver a combined portfolio solution that offers NBU-based backup and recovery alongside other Veritas data services.