



Veritas NetBackup™
Operations Manager and
Veritas Backup Reporter
Backup/Recovery Management
and Reporting

Veritas NetBackup™ Operations Manager and Veritas Backup Reporter

Backup/Recovery Management and Reporting

Contents

Executive summary	4
Introduction	5
The case for backup reporting	5
Standardized alternatives to spreadsheets and scripts	6
Multivendor alternatives to point solutions	7
Integrated solutions and stand-alone products	7
Differentiating operational monitoring and reporting solutions	8
Operational monitoring dashboards	8
Reporting solutions	10
Evaluating Veritas NetBackup Operations Manager and Veritas Backup Reporter	11
Key reports	13
Success/failure metrics	13
Resource utilization	15
Customized reporting	17
Conclusion	20

Veritas NetBackup Operations Manager and Veritas Backup Reporter Backup/Recovery Management and Reporting

Executive summary

Exploding data volumes, complex backup environments, and pressure from customers and regulators for reliable data are driving the demand for backup and recovery (B/R) reporting packages. Separate from B/R operational management and storage resource management tools, reporting packages offer:

- Better transparency than scripts and spreadsheets, with fewer hidden costs
- Normalization of results across B/R solutions that use different definitions for key measurements
- Tight integration with B/R tools, for consistent measurements across storage tiers and reporting time horizons

Integrated dashboards for real-time operational monitoring are fundamental to any mature backup and recovery solution, but they are no substitute for business-focused reporting.

Reports serve the needs of multiple stakeholders, documenting:

- Service-level compliance, capacity forecasts, and performance trends for data center administrators and managers
- Costs and charges of backup and recovery services for IT finance and internal and external customers
- Performance related to policy, contract, standard, or regulation for managers, customers, and officials

Veritas NetBackup Operations Manager includes sophisticated operational tools and logs, offering real-time measurement and control of backups and recoveries from inside the B/R solution. Veritas Backup Reporter provides the consistent, transparent, business-focused reports organizations need to establish and document the contributions IT services make to business value.

Introduction

New technology and market and regulatory pressures are redefining B/R product and service categories. Solutions for backup and recovery reporting and management are prevailing over local reporting scripts and spreadsheets, which are overwhelmed by the volume and complexity of data under protection. They are also emerging as a product category independent of B/R operational tools on the one hand and storage resource management (SRM) suites on the other.

As this new product class grows to maturity, vendors of B/R operational tools, reporting solutions, and SRM suites are defining and bundling their products, options, and services in different ways. This report is designed to help data center technical, administrative, and executive staff navigate the new product landscape and identify key issues they must address to balance efficiency and risk in their backup environments.

The case for backup reporting

Backup reporting solutions are not “just another tool to manage.” They resolve a fundamental problem caused by complexity and high data volume and demand at large data centers.

Data volume is growing in every business, with petabyte levels no longer rare. At the same time, the complexity of backup and recovery infrastructure and processes is increasing beyond the capacity of yesterday’s report and management tools. The factors driving process complexity include:

- Rise of advanced 4 GB Fibre Channel and IP-based SAN architectures
- Acceleration of the move from tape to disk-based data protection
- Emergence of tiered storage and information lifecycle management (ILM) strategies
- Globalization of backup strategies, driven by storage economics and risk of regional disasters

Volume and complexity strain data center operations. Backup and recovery now rate as the number one storage “pain point.” Although as much as 66 percent of storage management effort is directed at backup and recovery, between 5 percent and 20 percent of backup jobs fail nightly, and recoveries are still hit or miss.¹

Even as data volume and complexity compromise B/R effectiveness, the demand for reliable, well-documented backups has grown. These demands may be internal, from Service-Level Agreements (SLAs), chargebacks, or continuous improvement frameworks. Even more compelling are external demands from regulatory agencies, the courts, and paying customers.

¹ P. Goodwin and J. Wells, “Backup Reporting Tools Shootout.” Louisville, CO: Diogenes Analytical Laboratory, Inc., 2005.

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For reliable, documented backups of growing data volumes in complex environments, more IT organizations every year turn to B/R management and reporting solutions. The growth of this market—estimated at an annual 9.4 percent over the next five years²—is evidence of how IT executives are attempting to meet the challenges faced by data centers today.

Standardized alternatives to spreadsheets and scripts

Before the introduction of commercial backup and recovery reporting systems, large data centers had to use manual methods or local shell/batch scripts to address their growing need for B/R reporting. The growth of data center storage volume and complexity, however, has made manual checks and spreadsheet record-keeping virtually impossible. Staffing constraints prevent manual log-in and checking across hundreds of servers. Even if it were possible, manual checks and spreadsheet record-keeping present significant risks:

- Staff are likely to skip checks when other urgent tasks demand their attention—typically when accurate reports would be most valuable.
- Compliance risks increase with the possibility of errors in manual logs—and manual records may not meet regulatory requirements.
- Opening hundreds of systems for access by backup and recovery staff raises security concerns and adds requirements for security management.

Attempts to automate using locally created scripts may represent false economy because scripts:

- Require costly skill sets to make even small changes and involve tedious, repetitive work, risking lack of staff motivation or loss of experienced staff
- Demand constant maintenance to keep up with new patches and releases of backup software
- Do not scale well in the face of organic growth, mergers, or acquisitions
- Create a hidden barrier to adopting new technologies

Worse, manual and locally created reports seldom resolve the disagreements they are intended to address. Written by technicians for their own use, they may not reflect customer or regulator concerns, and their repeatability, auditability, and transparency may be called into question.

² L. DuBois, "Market Analysis: Worldwide Storage Management Software 2006–2010 Forecast." Framingham, MA: IDC, May, 2006.

Multivendor alternatives to point solutions

Monitoring and logging functions built into backup and recovery tools support real-time alerts and control. But these job-level tools don't support business-level reporting and analysis, and attempts to adapt them carry risks and costs similar to those of automated scripts.

Building reports from operational data adds training, documentation, and maintenance costs, especially when data centers run multiple B/R solutions. It also requires reconciling reports that use different definitions and terms for objects and events. "Apples-to-apples" data is essential to compare the performance of solutions within a data center or between data centers. Only a multivendor solution can deliver the data consistency needed to analyze data protection environments globally rather than as an archipelago of incommensurable solutions.

Multivendor solutions, designed specifically for reporting across multiple vendors' B/R solutions, avoid gaps and duplication and keep results aligned across platforms, backup solutions, and applications. They reduce the time and effort of reporting as they build confidence in the reports themselves.

Integrated solutions and stand-alone products

Backup and recovery management and reporting alternatives include stand-alone products from niche suppliers and solutions integrated into the product lines of full-line solution providers. Both create reports based on data from multiple vendors' B/R solutions, but they differ in focus and degree of integration.

The relative merits of integration over best-of-breed functionality have been discussed since the advent of the software industry. But the interdependence between backup/recovery management and storage resource management and the complexity of backup and recovery operating environments raise the value of integrated solutions:

- Integrated product families use compatible tools for short-term operational checks through long-term business analysis, speeding up problem identification.
- Integration applies consistent underlying measurements across all reports and analyses, helping to ensure data consistency.
- Integrated solutions offer reporting and trend analysis for backups across the entire range of storage media and assets, online and offline.

Differentiating operational monitoring and reporting solutions

Reporting solutions are intended to complement operational tools, not replace them. The following discussion provides an overview of the users, roles, and capabilities that differentiate the two solutions.

Operational monitoring dashboards

Backup and recovery dashboards like Veritas NetBackup Operations Manager (see Figure 1) provide advanced tools for the daily administration of backup and recovery processes, with visibility and control processes operating at or near real time. They are used by backup administrators to:

- Control operations, with visibility and administration of global domains from a single console
- Monitor operations and respond to alerts, with anticipatory performance monitoring to identify emerging problems before they reach alert thresholds
- Troubleshoot operations using tools and diagnostics that help identify problems' root causes

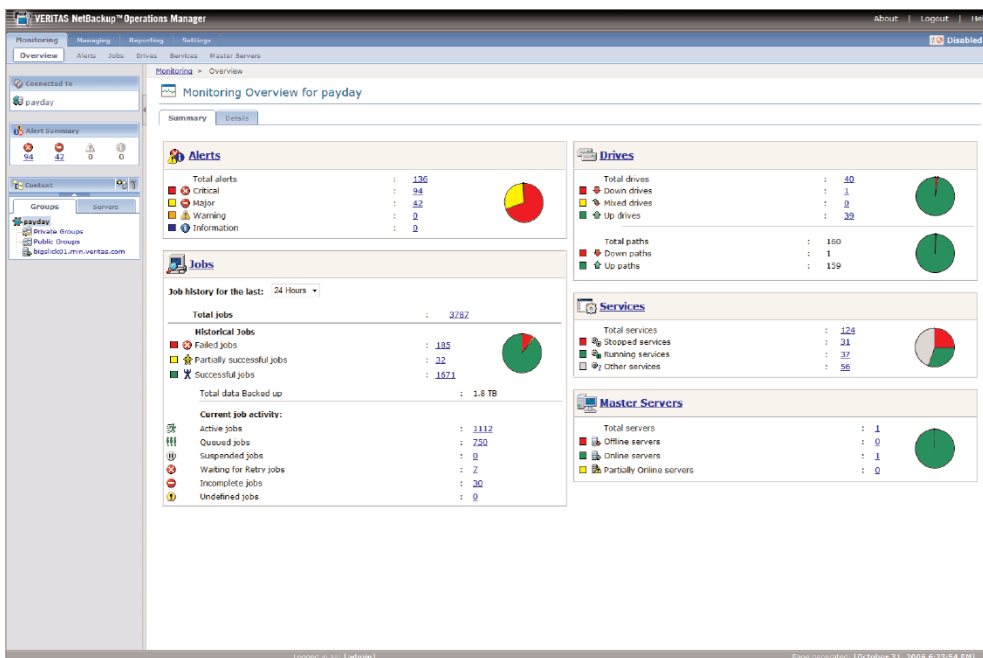


Figure 1. NetBackup Operations Manager dashboard. Operational monitoring dashboards integrated into backup and recovery solutions support real-time job-level monitoring and control across the global backup/recovery environment.

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Operational monitoring is fundamental to backup and recovery: No B/R solution without it is complete. A basic tool kit includes event notification, success/failure logging, and summaries. Intermediate tools may add short-term capacity planning and predictive analysis. High-end integrated tools like Veritas NetBackup Operations Manager complete the tool set with solution health monitoring and operational reports.

These operational tools are optimized for real-time environments, with time horizons ranging from instantaneous to about a month. The best of them use monitoring processes that are in line with monitored operations, rather than superimposed on them by a polling process. In-line monitoring helps ensure that backup and recovery operations do not interfere with polling, or vice versa, and that polling does not miss events that fall between polling cycles. Attempts to catch events by polling more frequently cut into performance, add network traffic, and do not achieve real-time performance.

Centralized administration is particularly important in modern backup environments, which may span data centers, regions, and even continents. Busy backup administrators also appreciate Web-based tools that allow monitoring and administration from any console, not just those with specialized management tools installed. This allows them to monitor emerging problems and bring up new resources to solve them from any location.

The best operations and management tools allow operators and administrators to:

- View logs and troubleshoot in job context with search and filter functions for easy issue identification
- See alerts in terms of backup and recovery policies without delays to interpret raw data—and respond to emerging conditions before jobs fail
- Drill down to the device, job, or service level for fast problem isolation and control
- Use proven predefined reports to manage day-to-day operations
- Monitor policy changes to distinguish alerts caused by changes in the operational environment from those caused by changes in policy
- Take direct corrective action from a central dashboard

These integrated tools are necessary for effective backup and recovery administration, but they have an operational rather than a business focus. Their scope seldom extends beyond the narrow time window needed to execute, validate, and troubleshoot individual backup and recovery jobs or beyond a single vendor's B/R solution.

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Reporting solutions

Business-level reporting solutions like Veritas Backup Reporter help IT organizations align their operations with business goals. The solutions' flexibility allows broad, effective use by IT managers and specialists, application owners, IT finance, the legal team, line-of-business managers, IT architects, and capacity-planning teams, as well as external customers and compliance auditors.

IT departments use reports to track and analyze service levels and to help optimize data center asset management. Of particular importance are history, trend analysis, and forecasting tools built into the solutions for tracking and documenting process improvements and trends against SLAs. Forecasts support capacity and resource planning, including decisions about when business recovery objectives make it necessary to purchase new drives, servers, and media.

Reports also document the cost and value of IT services in transactions such as:

- Proof of recoverability of key information assets and documentation of compliance with recovery time and recovery point objectives (RTO and RPO)
- Analysis of costs and charges by application, department, user, and more
- Transparent, repeatable documentation for internal and customer chargebacks, supporting backup and recovery as business services
- Analysis of data protection management costs
- Identification of end-user or customer behavior that affects backup and recovery—for example, suboptimal scheduling of backup jobs—so customers can balance the risks and costs of their retention policies
- Measurement of risk exposures, including recoverability of clients and applications

The solutions are designed to provide accurate, auditable reports that measure performance against internal service-level agreements and help to verify requirements from continuous-improvement frameworks such as ISO 1799 (BS 7799), the OECD Guidelines for the Security of Information systems and Networks, and CobiT and ITSM frameworks including ITIL and Six Sigma.

Veritas NetBackup Operations Manager and Veritas Backup Reporter Backup/Recovery Management and Reporting

External reports help to meet the record-keeping requirements of regulations including:

- Sarbanes-Oxley Act of 2002 (publicly traded companies)
- Gramm-Leach-Bliley Act of 1999 (financial services)
- Health Insurance Portability and Accountability Act (health care industry)
- Federal Information Security Management Act of 2002 (U.S. government)
- European Union Data Protection Directive
- North American Electric Reliability Council cybersecurity standards
- California Senate Bill 1386 (Security Breach Information Act)

Evaluating Veritas NetBackup Operations Manager and Veritas Backup Reporter

The NetBackup Operations Manager tool set is a real-time monitoring, logging, and alerting dashboard built into the Veritas NetBackup solution. It provides the entire range of tools needed to operate NetBackup across a global enterprise backup and recovery environment, from binary event notification, logging, and summaries to health monitoring. Its advanced predictive analysis allow administrators to make real-time decisions needed to adapt backup and recovery operations to instantaneous and day-to-day changes in data-center operations.

Veritas Backup Reporter is an advanced multivendor reporting solution that works with Veritas NetBackup and Symantec Backup Exec as well as all tier one data protection products. Veritas Backup Reporter includes convenience features typical of mature reporting solutions and integrates with other components of Symantec's solutions set to eliminate gaps and duplication, delivering consistent reports across heterogeneous backup and recovery environments.

Veritas NetBackup Operations Manager and Veritas Backup Reporter Backup/Recovery Management and Reporting

Its advanced heuristics and forecasting work across complex storage environments, allowing data center executives to redeploy or add capacity as needed to meet future requirements. Detailed reports support drill-down analysis to show the applications, databases, business departments, servers, or applications consuming the most storage resources, so the organization can make the appropriate adjustments. In an environment running 20 instances of Oracle®, for example, Veritas Backup Reporter can show resource consumption by group or department, server, application, or overall consumption by Oracle to pinpoint the location and pattern of resource consumption.

Veritas Backup Reporter takes the burden off skilled data center staff. Individual graphic dashboards can be configured to show even nonspecialist and Help Desk staff how backups are working. Since it supports information tailored to the requirements of the recipient, the solution gives business users and IT administrators the information they need to do their jobs without distraction by irrelevant detail.

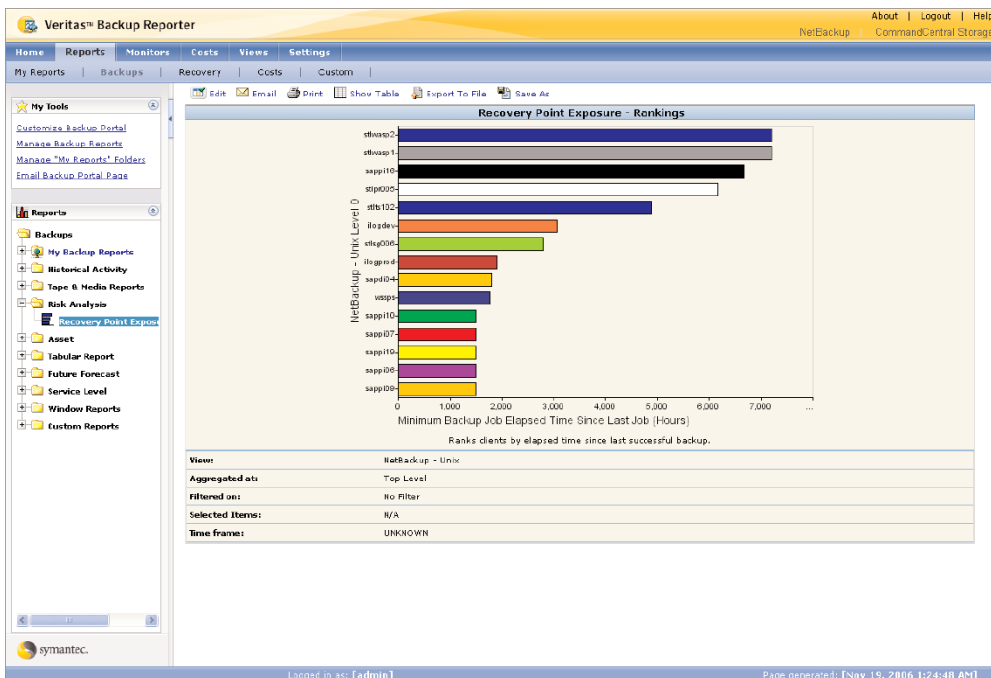


Figure 2. Service-level compliance. Reporting solutions—unlike operational monitoring dashboards—report data in business context. This display details the recovery point exposure of different application types.

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The solution provides transparent, credible reports with customer-specific views that protect confidentiality, encourage discussion, and guide customers to the most cost-effective backup and recovery practices. Reports make the cost basis of chargebacks clear, saving time and frustration in discussions with internal and external clients.

Finally, Veritas Backup Reporter shares Symantec's long tradition of market leadership and vendor neutrality. Reports are normalized across Symantec's own industry-leading NetBackup and Backup Exec data protection solutions and others based on their vendors' published command-line interfaces and data schema. The result is consistent "apples-to-apples" comparisons across heterogeneous B/R infrastructures on even a global scale.

Key reports

The full set of B/R recovery reports will depend on organizational priorities. An online storage service provider and a university genetics department, for example, will have different though equally urgent requirements. But a few key report categories are essential to virtually every environment.

Success/failure metrics

Measuring backup success rate is a universal priority, yet audiences use different definitions of backup success and failure. If four backup streams all fail on the first try but succeed on the second, administrators will measure success at 50 percent, but end users will measure it at 100 percent. If two of the retries fail a second time because end users forget to release the systems for backup, administrators would claim 100 percent success even as two end users reached for the phone. When compliance to SLAs, chargebacks, and billings all depend on success/failure definitions, the integrity and transparency of the underlying reports is critical.

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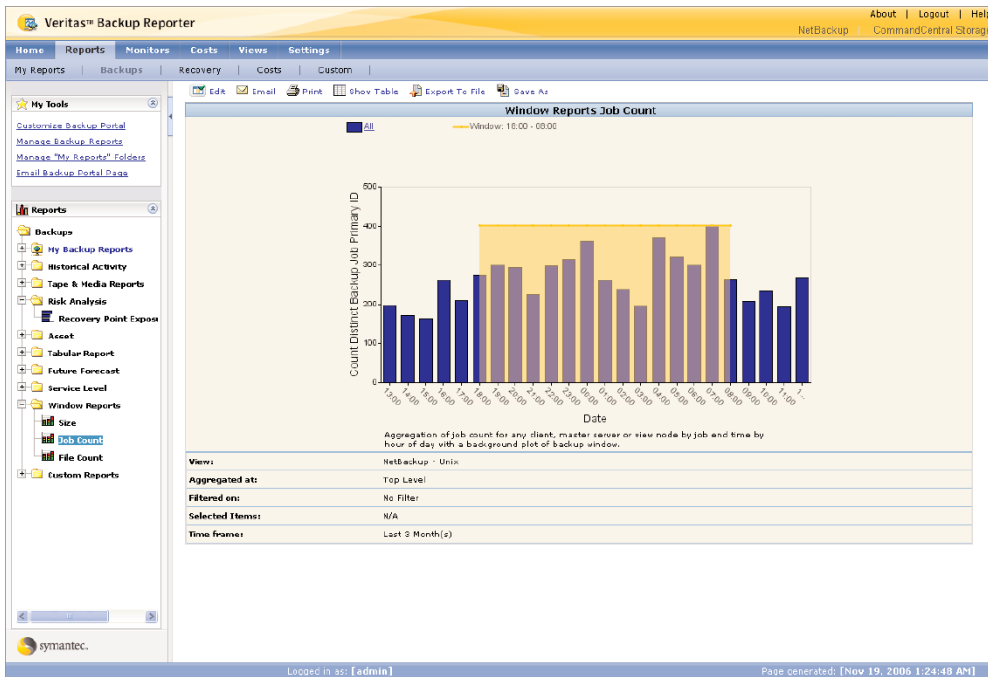


Figure 3. Backup window compliance. This display shows the hour of day that jobs complete against a backdrop that shows the backup window in which they are expected to complete for a data center.

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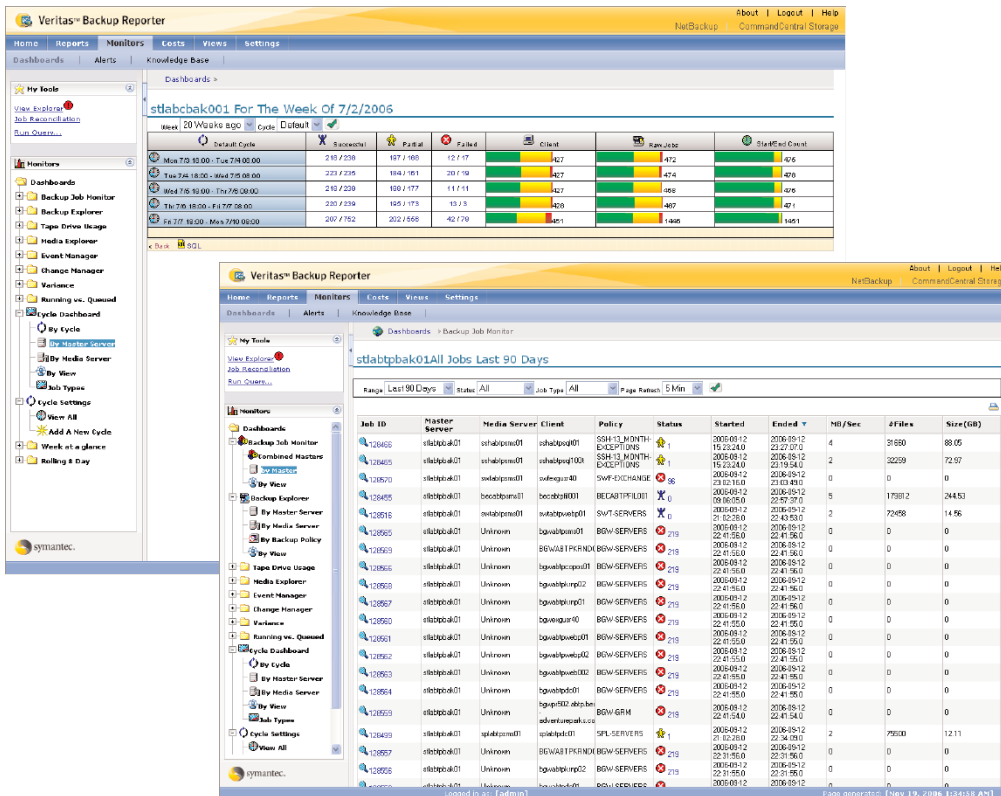


Figure 4. Success rate trends. Reporting solutions must accommodate different definitions of backup success and failure to accommodate the requirements of different audiences.

Veritas Backup Reporter provides a broad set of data protection success rate definitions and allows custom tailoring of definitions to meet the requirements of individual SLAs and policies—even individual customer contracts. Each definition targets an individual client, an individual policy, and an individual schedule and analyzes jobs, attempts, data streams, retries, and more. All reports include reconciliation options to exclude failed backups due to circumstances beyond the data center's control. The business result is more time spent on optimizing backup and recovery processes, including end-user behavior, and less time haggling.

Resource utilization

Storage capacity utilization reports from Veritas Backup Reporter help identify and prevent emerging failures due to storage constraints to minimize tape handling and other inefficient manual processes. They provide information in context to support long-term capacity reporting, improve scheduling, and avoid bottlenecks. They contribute to return on investment by avoiding capacity constraints and unnecessary purchases of additional capacity.

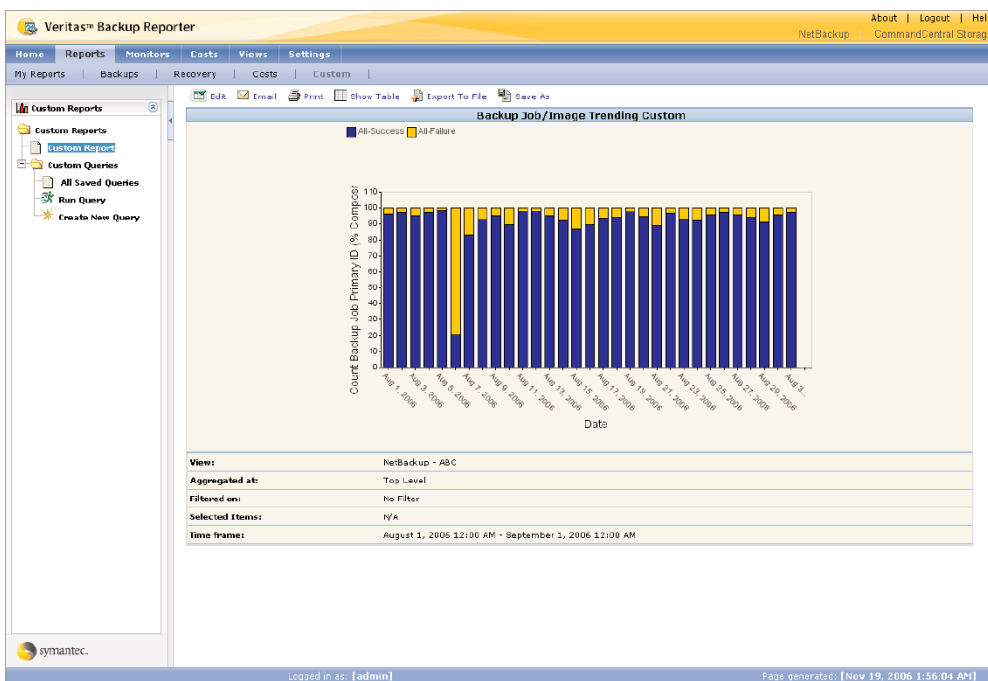


Figure 5. Success rate trends. Tracking job success against targets over time gives managers a powerful tool to identify and correct emerging problems before they reach the threshold of end-user awareness, and well before they compromise service-level agreements.

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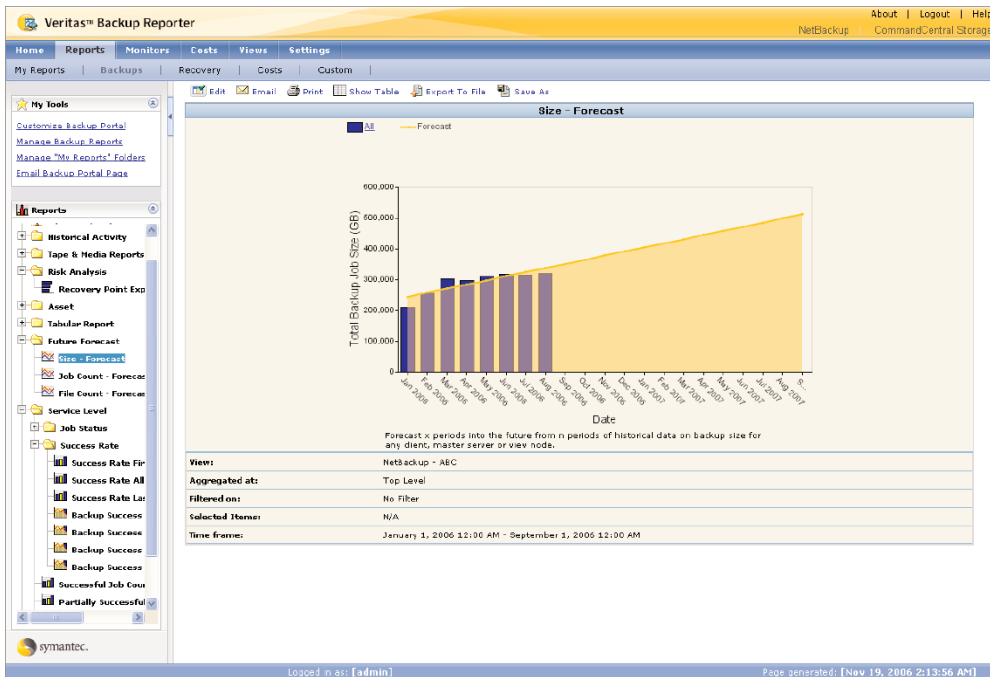


Figure 6. Data growth forecast. Reporting solutions should aggregate historical data across backup/recovery solutions to support forecasting. This report projects the growth of backup jobs globally, with drill-down to individual cities.

Customized reporting

Veritas Backup Reporter provides sensitive indicators to identify developing problems in backup performance and sophisticated tools to identify emerging problems in geographically distributed infrastructure, applications, departments, or storage assets. Veritas Backup Reporter’s unique capacity to organize data into management “views” helps put the information in the hands of the people best positioned to use it. For demanding users of IT services, “my report” is always the most important. Quick customization using the integrated Veritas Backup Reporter View Builder helps create, manage, and secure individual reports.

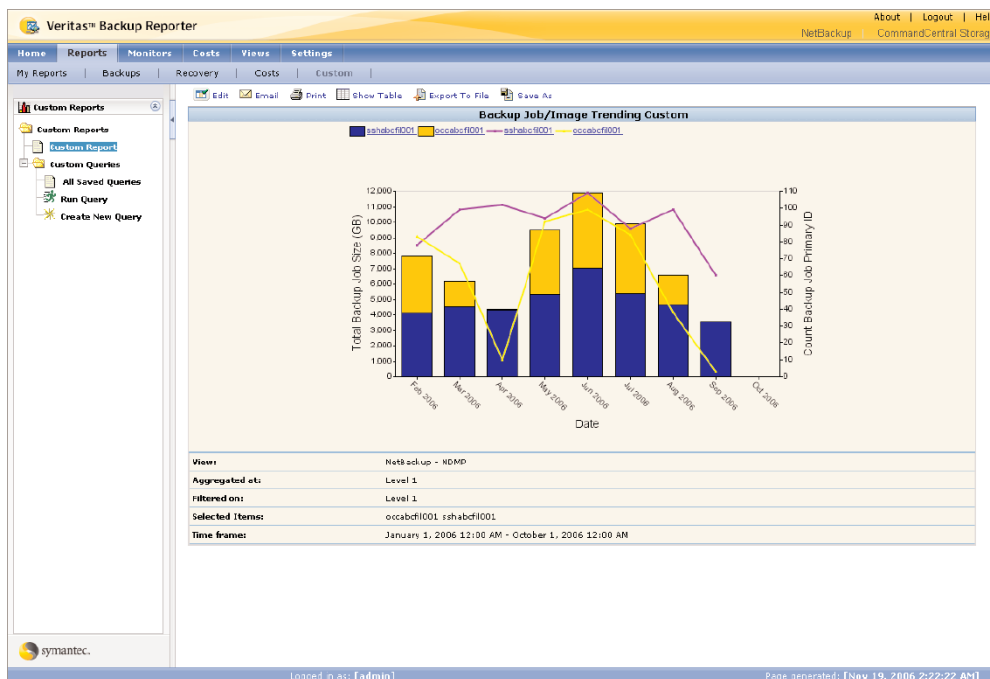


Figure 7. Resource utilization and trending. Drill-down capabilities in utilization reports help identify resource constraints associated with individual geographies, applications, storage tiers, etc. This global job size timeline shows a typical seven-day period—short-term resource constraints could be addressed by rescheduling backups instead of paying for new infrastructure or services.

Veritas NetBackup Operations Manager and Veritas Backup Reporter Backup/Recovery Management and Reporting

Veritas Backup Reporter View Builder creates hierarchies according to any user-defined organizing principle. Geographic, organizational, application, database, and storage tier are typical, but the possibilities are endless. This approach differs from simply grouping the data: Veritas Backup Reporter View Builder maintains hierarchies, identifying and eliminating overlaps and gaps that create report discrepancies. Administrators may then view top-level summaries of their areas of responsibility or drill down to data from the layer or asset of immediate interest. The process is easy to set up and navigate, so end users quickly grow accustomed to answering their own questions, offloading routine work from the Help Desk.

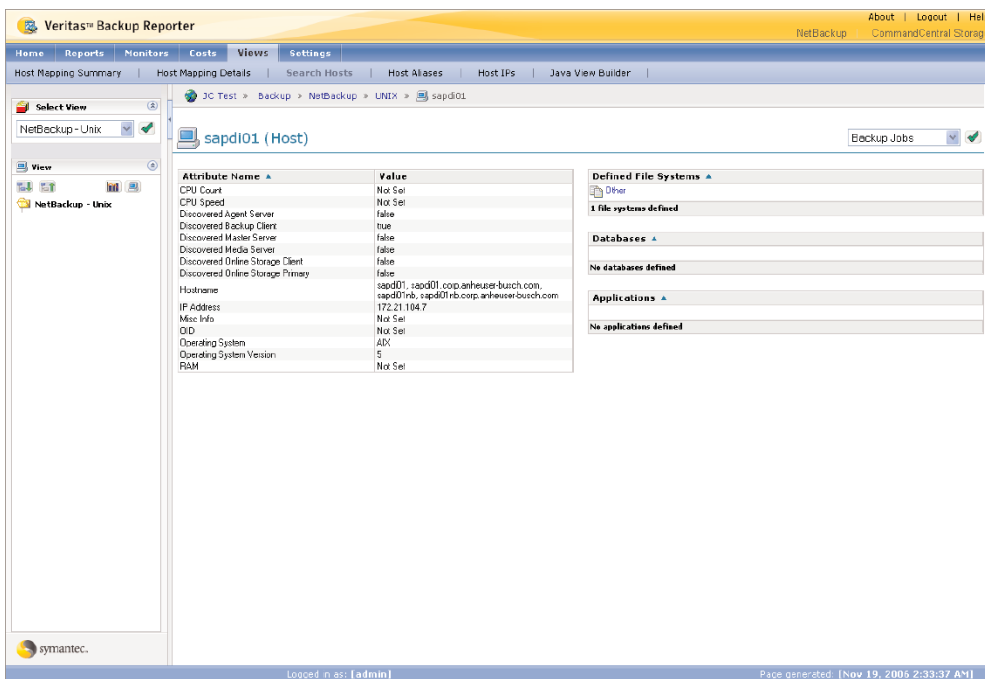


Figure 8. View management. By defining views to match individual administrative roles, lines of business or customer contracts, Veritas Backup Reporter links backup/recovery performance with business value.

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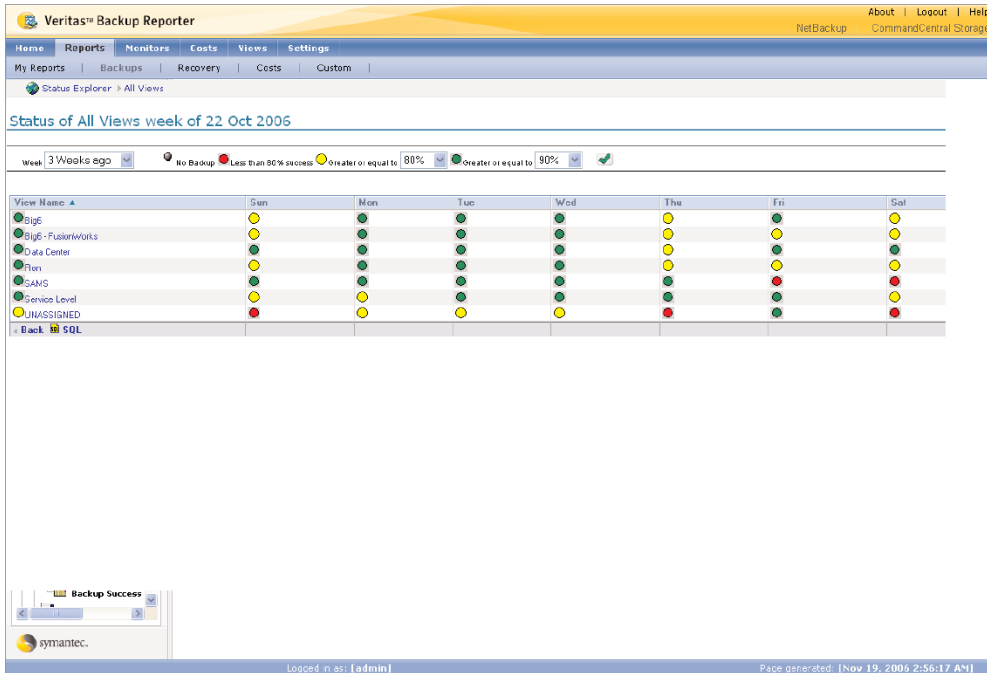


Figure 9. Service-level compliance. Combining custom views with predefined reports like this success rate summary gives administrators the ability to view their data in multiple contexts simultaneously. This custom dashboard scans for performance across geographies, clients, storage tier, application and environment.

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Conclusion

Storage volumes are expanding with no apparent limit, while backup and recovery processes grow steadily more complex. Yet the demands on backup and recovery—both internal and external—grow more stringent every year. These pressures have already made manual spreadsheet-based reporting methods obsolete. Shell and batch scripts are expensive and difficult to change, creating technology and vendor lock-ins and blocking data center standardization efforts.

Multivendor solutions offer the best reporting options, since few data centers have single-source backup and recovery solutions across all environments. Integrated solutions outstrip individual point solutions in reporting, analysis, and planning by using a single set of definitions and processes for the short and long term. They are also superior in their ability to integrate backup and recovery processes with overall storage management.

Built-in consoles for monitoring and control are essential components of backup and recovery packages and should be considered part of the minimum standard for these products. The consoles use fast in-line measurement processes to stay ahead of events in even the most complex B/R environments.

Backup and recovery management and reporting solutions are now emerging as important—and separate—components of data center strategies. Solutions such as Veritas Backup Reporter provide the feature set, advanced technology, and business reliability needed to align backup and recovery performance with the demands of data volume growth and complexity, regulatory requirements, and the desire to realize excellent returns on data center investments. As a leading reporting solution provider with its own backup and recovery product, Symantec is uniquely sensitive to data protection issues raised by infrastructure, capacity, and other management choices. The reports incorporated within Veritas Backup Reporter represent hundreds of person-years of “packaged expertise” from Symantec experts as a foundation on which companies can build backup and recovery reports that match their own requirements as well as those of their regulators and customers.

Veritas NetBackup Operations Manager and Veritas Backup Reporter
Backup/Recovery Management and Reporting

About Symantec

Symantec is the world leader in providing solutions to help individuals and enterprises assure the security, availability, and integrity of their information.

Headquartered in Cupertino, Calif., Symantec has operations in more than 40 countries.

More information is available at www.symantec.com.

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Printed in the U.S.A. 11/06 11572764