



Bright Solutions

**BDR: Backup Disaster Recovery &
Business Continuity White Paper**

It's not how fast you backup; it's how fast you recover!



Powered by Datacore:

B.D.R. Unit (Backup Disaster Recovery)

Contents:

03	Introduction
04-05	BDR
06-11	Dataguard
12- 13	Monitoring and Management
14- 16	Collaboration and Client Empowerment Zone
17-21	Cloud
22-23	Help Desk
24	Hardware Specifications



INTRODUCTION

About Datacore:

Datacore consulting was founded under three core principles. Reduce client risk and exposure, guarantee 99% uptime to clients, and operate a highly ethical company that contributes to the surrounding community. Our I.T. solutions and services are designed to reduce the exposure organizations have with their data and network.

The BDR is Born

Datacore was tired of existing backup solutions that were available as they did not meet the client's needs. Reasons for the dissatisfaction ranged from restores that were too laborious or took too long, to failure to verify backups or proactively monitor the server. For these and other reasons, Datacore wanted to tackle the proactive side of technology and build clients a better option.

This realization led to the creation of Datacore's Backup Disaster Recovery Unit (BDR). Datacore invested Millions of dollars and over 10,000 man hours to develop their BDR, and after many months of testing the virtualization and restore process, the BDR unit was finally perfected in 2006 by Datacore's top network engineers.

All BDR units are assembled and supported in a research and design/manufacturing center in Cleveland that is owned and operated by Datacore as well as run through a rigorous quality and assurance process. By not outsourcing the manufacturer, Datacore has full control over all operations concerning the design, production, implementation and support of all of their services. Datacore utilizes state-of-the-art hardware which is certified as to compatibility and functionality. BDR units are Intel based and through years of R&D, have been finely tuned for maximized productivity and failover.

With the BDR, Datacore has the capability to verify that all data is secure and safeguarded. Without a proper certification and verification method, the client cannot be sure of the existence and the quality of their backup. Datacore verifies backups on an hourly, daily, weekly, and monthly basis providing the client with assurance as to the quality and integrity of their backup.

BDR: Backup Disaster Recovery

We Start with a Complete Image:

We generate an image of all hard drive partitions via an agent, which is warehoused on the Backup Disaster Recovery Unit (BDR) physically located at our client's location. The data is stored using AES-256 bit encryption and compressed. We employ a block-level, not file-level, backup, which means that your data is captured at the level of 1's and 0's. Block level data is raw data which does not have a file structure imposed on it. Database applications such as Microsoft SQL Server and Microsoft Exchange Server transfer data in blocks. Block transfer is the most efficient way to write to disk and is much less prone to errors such as those that result from file-level backups. Additionally, block level backups are not affected by open files or open databases. The block-level image is an exact digital duplicate of the on-site server. A complete copy of the data is then transferred offsite by our clients request.

Near Real-Time Backups:

Our "Incremental Forever" methodology captures all changes to our client's initial image in one hour increments. The Incremental Forever technology not only backs up recent datasets but also allows end users to reconstruct the state of their data as it stood at the end of various restoration points. This level of forensic and auditable data recovery may satisfy various regulatory requirements (such as HIPAA and GLBA) for data retention and data record reconstruction.

Intuitive and Flexible Restoration:

A good backup system should allow for quick and flexible restores. Our solution allows for recovery of files, folders, partitions, mailboxes/messages, databases/tables using a quick and intuitive process. Our 15-minute incremental based backup allows restores to be done from any point in time, allowing for multiple versions of files, folders, messages/mailboxes, database/tables to be restored.

Virtual Server Capability

If any of our client's covered servers fail Dataguard's server virtualization technology embedded in the BDR allows client's servers and applications to be restored and rebooted in a virtual environment. This virtual server running on the BDR will restore our client to functionality and continue to backup incremental changes. Once a new server has been designated the BDR's administrators can restore the latest up to date image to the new server.

Secure Remote Storage:

After imaging the servers to which it is attached, the BDR unit then creates an encrypted tunnel and transmits the imaged data to a secure offsite location where it resides in an encrypted, compressed format. Transmitting data to a remote site is a key component of Dataguard. It guarantees that, in case of physical damage to our client's network or BDR, or even regional disaster, the data is safe in uncompromised locations. Encryption is an important step in the process of transmitting data between the BDR and the remote sites, because it greatly reduces the risk of data loss incidents that plague magnetic tape and prevents man-in-the-middle attacks during transmission.

24x7 Completely Managed Solutions:

Our Network Operations Center (NOC) monitors our client's BDR units and the attached servers 24/7. Failed processes generate immediate alerts to our engineers, who often remotely correct errors within minutes of receiving notification. In case of more serious Network issues, we will conduct repairs at our client's site. If any BDR units are irreparably damaged or destroyed, Datacore will overnight ship replacements—pre-loaded with all stored data—directly to our client's location.

Hardware Independent Restore (H.I.R.):

H.I.R. Technology allows for accelerated recovery to the same system, to dissimilar hardware or to and from virtual environments. H.I.R. features also make system migration to a new server or consolidation to a virtual environment a straightforward process.

Disk-Based Backup and Disaster Recovery:

Disk-based backup and disaster recovery allows for rapid recovery of systems and data through disk imaging technology. Dataguard allows administrators to create real-time images of the systems and data in an enterprise throughout the day. There is no noticeable performance impact on systems, even when images (backups) are taken on the hour, eliminating backup windows for most organizations.

Backup of Managed Cisco Devices:

Cisco network equipment configurations (Security Appliances, Routers, Switches, etc.) will be backed up on a scheduled basis and whenever modifications are made. Copies of these configuration files will be stored offsite.

Datacore: Dataguard

Datacore provides innovative disk-based backup, disaster recovery, system migration, data protection and security solutions for servers, desktop and laptops. Datacore delivers software products that reduce downtime, improve security and stability for systems and data and lower the total cost of ownership for servers, desktops and laptops.

Introduction

Datacore takes binary images of data. Traditional solutions can back up either an open or a closed file, but not both. This forces the client to find two types of software in order to back up all of their data. Datacore's binary imaging eliminates this problem. Datacore takes an initial full image of the entire hard drive, including files and data, and stores that image so every point after that it only needs to backup incremental changes.

This results in:

- Reduced restoration time for servers and files
- Improved backup performance
- Verification of backups
- Collapsing of data to enhance storage capacity

Advancements in technology and price reductions have made it possible to combine disk-based backup technologies together with virtualization and offsite storage to improve backup and disaster recovery as well as business continuity.

With shrinking backup windows and increasing amounts of data, administrators are faced with many challenges ensuring critical data is protected and, more importantly, the data can be recovered quickly. Back up to disk is essentially the process of backing up data to a disk device rather than to tape. Backups then can be copied to meet archivers or offsite storage to meet regulation requirements.

P2P – Recovery from a physical system to the same or another physical system.

P2V – Recovery from a physical system to a virtual environment.

V2P – Recovery of a virtual environment to a physical system.

V2V – Recovery from one virtual environment to another virtual environment.

Reduced recovery time

Restoring the operating system to a virtual environment on the BDR can be accomplished in less than an hour, with the time to restore data determined by the network transfer rate and the amount of data. To recover a file from disk is only going to require as much time as it takes to copy the data over the network to the destination drive. The traditional tape method involves a labor intensive and time consuming process of first reinstalling the operating system on the failover server, then locating the tapes, and finally copying the data back to the drive. To recover a file or server data from tape, the tape first has to be mounted and then searched for the needed file. As the tape is a sequential media, this process can take many hours or even days, depending on the technology used.

Improved backup performance

The backup window can be dramatically reduced by backing up to disk first. Once full backups have been taken, administrators can back up only the changed data since the last full or incremental backup. The backups are saved at the speed of disk and there is no need to swap tapes in and out. Administrators can also stage their backups to disk first, and then allow the data to be archived or sent offsite during the day or at any other time.

Increased success rate of backups and restores

Using disk as the storage destination for our client's backups can prevent backups and recoveries from failing due to:

- Tape drive failure
- Data not actually being written to the tape drive
- Open files not being backed up causing undesired results when restoring data or the operating system.

As a backup to disk is not constrained to a limited set of tape drives, it's easier to accommodate changes in the backup load and the number of parallel jobs running. Administrators can save time and money backing up to disk as a first line of protection leveraging an archiver or offsite storage as an archival solution.

Datacore's Dataguard: Complete system and data protection

Datacore's Dataguard line of products provides disk-based backup and bare metal disaster recovery for enterprise servers, desktops and laptops. Dataguard products protect our client's entire system including the operating system, applications, critical data, configuration settings, security settings and hidden utility volumes. Datacore's Dataguard provides fast, reliable bare-metal recovery of critical systems, whether the problem is operating system corruption, catastrophic failures, viruses, accidental user error or hardware failure. Combining Datacore's disk-based backup and recovery with virtualization and tape backup solutions provides unparalleled performance and protection for our clients.

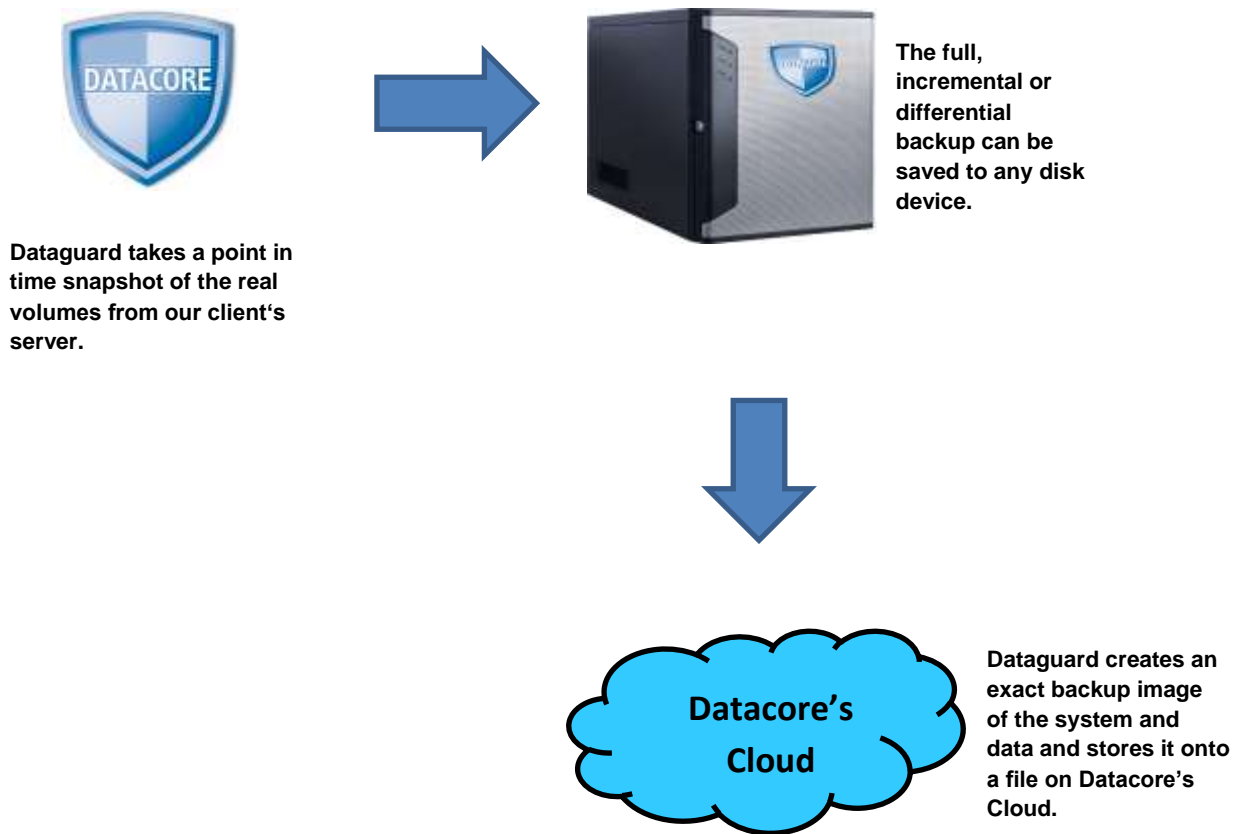


Figure1. Dataguard Live Backup

Datacore's Dataguard creates live, point-in-time backups using its reliable snapshot technology. Dataguard's unique incremental functionality allows backups to be taken while our client's systems are online.

Rapid bare-metal recovery

The Datacore Recovery Environment allows clients a quick recovery from system failure. They can simply boot from the Datacore Recovery CD and restore entire systems—including the operating system, applications, configuration settings and data—within minutes.

The Datacore Recovery Environment provides hardware independent restore for physical to physical system (P2P) recovery. The Datacore Recovery Environment also supports conversion from physical systems to virtual environments (P2V), virtual environments to physical systems (V2P) and virtual environments to virtual environments (V2V). Dataguard is complimentary to VMWare™ and Microsoft™ Virtual Server and PC for quick and reliable disaster recovery and system migration.

Within the Datacore Recovery Environment, clients may restore systems and also back them up. This is useful in two cases: 1. If their system is unable to boot, Datacore allows them to back that system up before a destructive restore could destroy their valuable data; 2. ExactState backups, which are backups of volumes that are offline, can be taken when the best possible backup or cold backup is required.

Through Dataguard's remote management and remote control capabilities, the administrator or helpdesk personnel can manage Dataguard without sitting in front of the computer he/she is managing. In case of system failure, the Datacore Recovery Environment can be controlled remotely for full system recovery.

Enhanced system and database backup through Microsoft® VSS

The Windows Volume Shadow Copy Service Framework (VSS) provides an infrastructure that enables third-party storage backup programs, business programs and operating systems to work together to provide better backup and recovery. Dataguard is both a Backup Requester and a software Snapshot Provider. This enables Dataguard to use the existing snapshot found in Windows XP and 2003 without installing additional drivers. For enhanced backup features such as rapid incremental or differential backups, the VSS framework can use our registered snapshot provider. In both cases, better backups of the operating system and applications such as Exchange and SQL will be created.

Active backup image files

Dataguard point-in-time backups can be mounted as drive letters or mount points, both for read-only or read-write access. This flexibility allows scanning, sharing, updating or even working from a backup image file for our clients. For example, administrators could update an existing backup or scan a backup for viruses and fix it before restoring a point-in-time. Point-in-time backups can also be shared on the network for end-user self-restores. Mounted backups look just like the original volume, end users can quickly use Windows Explorer to search, find and recover files. File and folder restoration becomes a simple drag and drop operation.

Flexibility in creating backups

Datacore Dataguard allows administrators to select the best type of backup our client's needs. There are three types of backups our clients can create: 1. Create live backups using Datacore volume snapshot technology. 2. Create live backups using Microsoft VolSnap without the need to install software or drivers. 3. Create ExactState backups from the Datacore Recovery Environment.

DATAGUARD

Fast and Reliable Server Recovery & System Migration – P2P, P2V, V2P and V2V

Datacore Dataguard provides quick and reliable disaster recovery, system migration and data protection for Windows servers. Dataguard provides bare metal recovery of the Windows operating system, applications such as Exchange and SQL and your critical data.

Dataguard provides hardware independent restore for physical to physical system (P2P) recovery. Dataguard also supports conversion from physical systems to virtual environments (P2V), virtual environments to physical systems (V2P) and virtual environments to virtual environments (V2V). Dataguard is very complimentary to VMWare™ and Microsoft™ Virtual Server for quick and reliable disaster recovery and system migration.

Dataguard provides the following benefits to your clients:

- Bare metal recovery of Windows servers in minutes.
- Restore or migrate backup images to and from physical systems and virtual environments (P2V, V2P and V2V).
- Hardware independent restore of backup images to different systems (P2P).
- Full support for online backup of applications such as Exchange and SQL. Schedule automatic full and incremental backups.
- Image management to minimize storage consumption and simplify archiving.
- Bootable recovery CD provides automatic hardware detection and network support.
- A simple view to quickly recover files and folders or update backup images.
- Compress and encrypt backup images for efficiency and security.
- Dataguard console to simplify backup management across your enterprise.
- Recover your servers remotely.
- Save backup images to USB, Firewire, BDR, SAN or any network location.

Dataguard Small Business Server Option

Datacore™ Dataguard SBS option provides fast and reliable disaster recovery, system migration and data protection for Windows SBS servers. Dataguard SBS option provides bare metal recovery of the Windows operating system, applications such as Exchange and SQL and your critical data.

Dataguard SBS option provides hardware independent restore for physical to physical system (P2P) recovery. Dataguard SBS option also supports conversion from physical systems to virtual environments (P2V), virtual environments to physical systems (V2P) and virtual environments to virtual environments (V2V).

Trouble Tickets may be opened by your client's designated I.T. Contact Person by email, chat, or phone to our Help Desk or through our Client Empowerment Zone. Each call will be assigned a Trouble Ticket number for tracking. Our escalation process is detailed in the chart below. Datacore will provide ongoing monitoring and security services of all covered desktops, and provide monthly reports, as well as document critical alerts, scans and event resolutions for your clients. Should a problem be discovered during monitoring, our Help Desk shall make every attempt to resolve the condition in a timely manner through remote means for your client.

CLIENT'S SERVICE REQUEST ESCALATION PROCEDURE

- Support Request is received via Help Desk or Client Empowerment Zone
- Service Ticket is created in Client Empowerment Zone
- Issue is Identified and documented by dispatch and assigned to proper technician or engineer
- Level 1 Resolution: issue is worked to a success or escalated
- Quality Control — Issue is verified by dispatch to be resolved to Client's satisfaction
- Service Ticket is closed
- All details have been documented and updated in Client Empowerment Zone

Conclusion

Datacore's Dataguard backup and recovery solutions, as opposed to traditional backup recovery methods, creates a reliable and verifiable backup system, an intuitive and flexible restoration, and proactive network monitoring for client's enterprise. Datacore's proven technology is found in many industry leading backup and recovery solutions today and with millions of installations worldwide continues to provide reliable and fast recovery of systems.

Monitoring and Management

Datacore's Monitoring and Management system is a full multi-function network and application monitoring and management platform, providing network discovery, monitoring, and alerting including traffic flow (NetFlow/sFlow/J-Flow/ptFlow), VoIP and wireless modules; application monitoring; policy-based remediation; and advanced visualization and reporting. This system can find, recognize, and bring under management both network devices as well as servers, including physical and virtual elements of each.

ADVANCED ALERTING

Automatic notifications get sent to Datacore via email or SMS when your client's network performance degrades, allowing us to fix their problems before there is any impact on our clients or their clients.

APPLICATION MONITORING

Datacore uses in-depth visibility of running processes and performance counters for critical applications, network services, and web applications. This helps prevent application failures and identify degradations early.

AUTOMATED REMEDIATION

Datacore can automatically take actions to restore services when a failure occurs, including restarting applications and windows services, or rebooting servers allowing our client's to focus more time on revenue-generating initiatives.

CLOUD MONITORING

Using a single dashboard, Datacore securely manages and monitors both our client's local infrastructure and their remote cloud computing environments.

LOAD AND GO DEPLOY

After installation, Datacore performs a fast and comprehensive scan of our client's entire network to discover all devices. Using various discovery techniques Datacore provides a set of attributes for each device, and then assigns it to a smart policy with recommended monitors.

REAL-TIME PERFORMANCE MONITORING

Monitors performance counters for routers, hubs, switches, servers, and applications in real-time.

REPORTING

Datacore has the ability to generate reports for our client's entire collected network data. These reports can be emailed, printed, or saved. Datacore uses these reports to create a report scheduler, and email reports on a daily, weekly or monthly basis to ensure everything is running smoothly for our clients.

ROUTER CONFIGURATION BACKUP

Datacore has the ability to automatically backup configuration files for our client's routers and switches. Configuration back-ups are scheduled to run as needed and are stored in the Datacore database, and immediately send alerts when any configuration has been changed.

Datacore's virtualization makes it easy to monitor our client's virtual environment to ensure it is running smoothly. Automatically discovers their host ESX servers and associated guest virtual machines and provides insight into key statistics like status, CPU memory, disk usage and interface traffic.

Collaboration and Client Empowerment Zone

“You have to have human interaction to make a successful I.T. company.”

At Datacore we understand the importance of excellent customer service. Our Client Empowerment Zone (CE Zone) is designed to make it easy for us to build a lasting service relationship with our clients by streamlining the processes and customer contacts. The CE Zone combines ease of use with the important task of assigning the correct issue to the correct solution.

The collaboration of our Client Empowerment Zone allows on-demand interaction, and involves three main components:

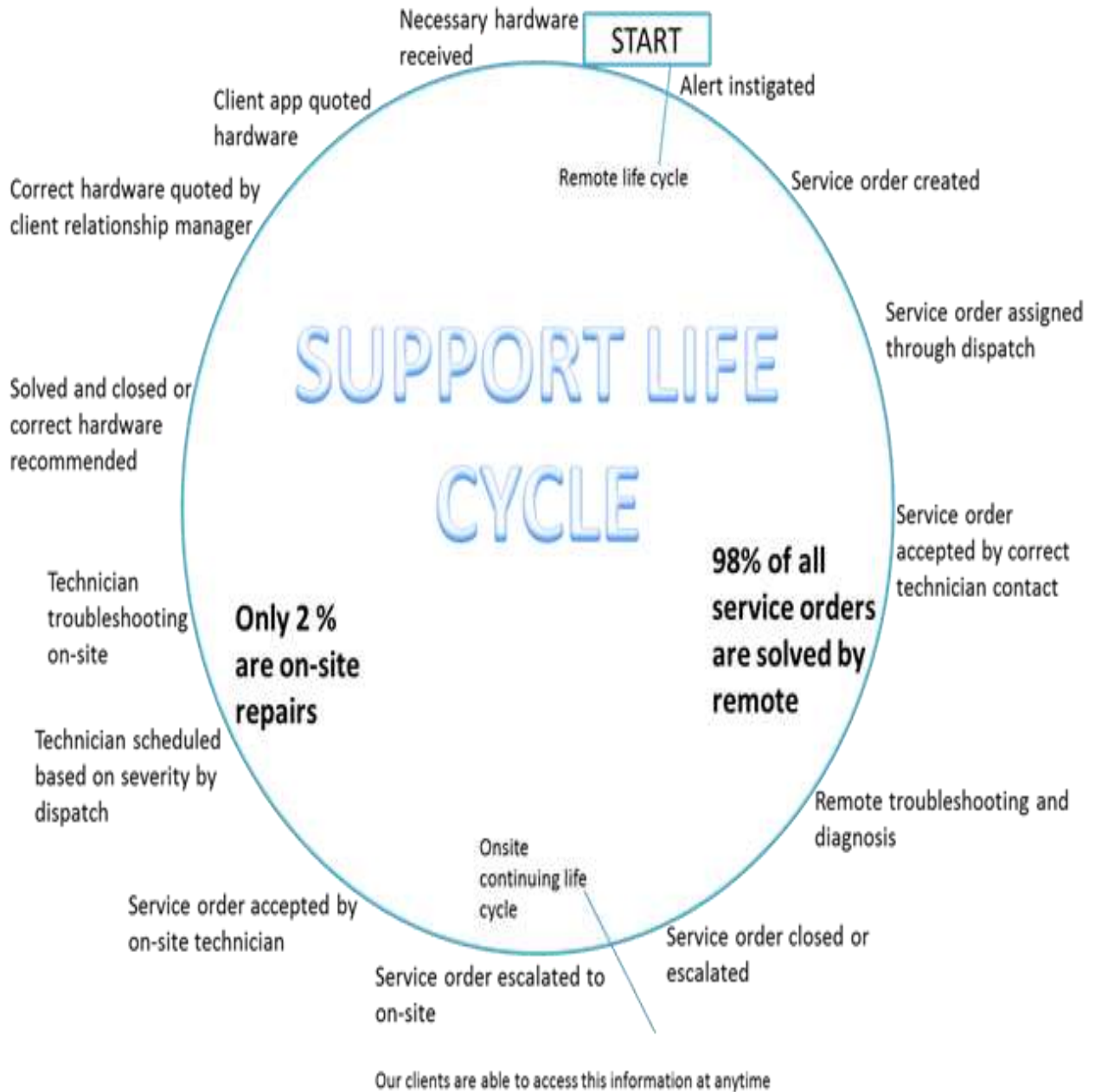
- Our in-house Dispatch Capabilities
- Transparency and Reporting of process
- Help Desk capabilities including phone, chat, and email.

This process begins with dispatch capabilities unlike any other. In the CE Zone, dispatch is a human analyzer to enhance customer satisfaction and expedite issues. Each individual service ticket is classified according to the critical nature of issue, the technical expertise or engineering the issue requires, and immediately dispatches the ticket based on that criteria. Once assigned to a technician it doesn't stop there, the service ticket is noted either complete or escalated to next level if not closed. If escalated, the engineer can review notes of the previous technician, saving time by eliminating duplication of efforts and clearly identifying the issue. Our dispatch is notified constantly of open tickets, thus ensuring that ALL tickets receive attention, and do not fall through the cracks. By correctly dispatching the correct work ticket to the correct technician on a timely basis, all while ensuring completion, Datacore accelerates the recovery time for the clients, improves the customer experience, and solidifies relationship with our clients.

Another important component of the CE Zone is transparency. The CE Zone provides the advantage to look at the non-modified, non-editable process of their service tickets, at every stage from entry to completion. By providing the capability to view tickets and notes from conception to completion, clients can view the process step by step. The client experience is enhanced by being able to view the entire process and being secure that the issue in question is receiving the proper attention and care they expect and deserve. Additionally, the CE Zone provides timely up to date reports on clients network, servers, anti-virus, backup verification, hardware and software, and issues. The client is provided with an easy to understand monthly report that describes their network and issues, in a non-modified and non-editable format keeping them completely informed about their network.

The final component of our CE Zone is our local, in-house Help Desk. Manned between the hours of 7:30am and 8:30pm M-F, client can reach the Help Desk by the utilization of phone, email, or live chat. These communications capabilities provide end users with timely and quality service. The technician on the helpdesk has the enhanced capability of viewing the client configuration and issue based on the level of the service agreement; reducing the repair time significantly. The Help Desk further involves a comprehensive remote service with the capability to solve 98% of incoming help desk issues. From a client perspective, there are no appointments required, a quality technician is available to assist, or escalate if the issue requires onsite support or an engineer with the correct skillset.

Client Empowerment Zone: Support Lifecycle



Cloud: “Always On”

Cloud

The cloud helps diminish security and privacy risks while improving compliance for our clients. With so many options available on the cloud, it can be overwhelming for clients to fully comprehend all these options. We here at Datacore have come to great lengths to tailor cloud options to our client’s needs. Our private cloud based data storage solutions are secure and seamless. Datacore’s Business Continuity Solutions provide our clients with the latest tools to protect their information, restore services as quickly as possible, and maximize their utilization of technology.

Always On

Cloud computing is an innovative way for our client’s organizations to work from anywhere, anytime, on almost any device. Datacore endorses technology that allows, “Always On.” “Always On” is a phrase used to depict how today’s modern workforce operates. By implementing cloud based solutions from Datacore, our clients can benefit from a significant increase from their return on investment. Datacore’s cloud solution significantly reduces the installation, maintenance, and upgrade expense of network management. The concept of cloud computing removes the physical barrier from IT systems, thus eliminating the requirement of reinvesting in servers and other hardware or software.

Real Time Backup Solution

Datacore has developed a highly specialized, cost-effective advanced cloud based real time backup solution that allows for instantaneous virtualization and cloud based redundancy. By focusing on cloud based and remote workforce solutions; Datacore has been able to grow at an exceptional rate. Traditional IT server management is labor intensive with significant onsite staff requirements to manage network infrastructure. Through cloud based state-of-the-art software and advanced help desk solutions, Datacore is able to drastically reduce our client costs and enhance efficiency and availability. This is done by eliminating redundant, time consuming, and repetitive tasks with internally developed advanced automated software. Datacore is able to offer our clients more comprehensive support without sacrificing service.

Cloud Pioneers

Datacore is a pioneer in cloud based application development. Cloud Computing is remote accessibility for services and programs through a computer network or the internet rather than from a local computer. With industry leading engineers and multiple Tier IV data centers, Datacore is able to host and provide elite cloud based and server based applications for dozens of clients depending on their unique needs.

Cloud computing pioneers first thought of the benefits that remote backups could offer the technology available was vastly different than today's offerings. For over seven years, Datacore has understood the progression of cloud storage solutions and the path that backup technology is taking. With the head start that Datacore had, we now possess one of the largest private clouds on the East Coast. This is further underscored with the recent expansion of Datacore to the Tier IV data center in Columbus, Oh and Greensboro, SC.

Off-site Storage

As part of Datacore's ongoing growth strategy and to better serve clients, Datacore has acquired off-site storage facilities with the best-in-class capabilities to increase capacity, manage greater data loads, and ensure clients adherence to regulatory requirements. Additionally, this gives clients a security and geographic advantage not offered through other solutions providers. Our technology consolidates and organizes incremental backups that reduce the offsite size by approximately 40% while maintaining the integrity of the backup.

DATACORE'S CLOUD

Datacore has 3 class IV datacenters which meet or exceed certification requirements for:

- SAS 70
- SAS 71
- SOX
- HIPPA
- SCORE
- and many others.

DATACORE'S CLOUD: DATACENTER PROVIDES ROBUST POWER

- The 19", anti-static, raised floor area is supplied by a 10,000 gallon diesel generator industrial class Uninterruptible Power Systems (UPS) boasting 940 Kilovolt amperes (kVA) of power capacity, with expansion capabilities up to 2.1 Megawatts.

SECURITY

- Our data center maintains a ‘round the clock onsite Network Operations Center (NOC), which monitors the security and video systems 24x7x365, and provides access control for physical security.
- Uniformed lobby security guards control access to the building entrances and elevators after hours, on weekends, and holidays. All network services are distributed via an overhead multi- tier ladder rack system.

ENVIRONMENTAL SYSTEMS

- Constant temperature and humidity control is maintained by 240 tons of HVAC cooling, distributed via a pressurized downdraft system under the 19" raised floor.

BANDWIDTH

- Our datacenters utilize multiple internet service providers, distributing internet with an advanced BGP interface to maintain the most reliable internet connectivity.

CLOUD PROVIDES:

- Primary servers & virtual networks
- CRM/ sales force automation
- Hosted exchange
- Custom web based applications
- Disaster recovery & backups
- Document management
- Work order/ building maintenance software
- Monitoring & management
- Virtual servers
- Line of business application hosting

Cloud

Not all clouds are created equal, with some clouds being private and some clouds being public. Datacore’s private cloud provides services that are secure, scalable, and highly reliable. Over the years we have created a unique blend of off-the-shelf and proprietary technologies that allow us to provide unsurpassed reliability and performance at competitive prices for clients.

Data Center Specifications

- Our cloud services are powered by a Tier IV data center-owned equipment co-located in large-scale, secure, enterprise-grade datacenters in Cleveland and Columbus. These facilities are designed for 99.999% reliability (no more than 5 minutes average downtime per year), are SSAE 16 Type II Certified (replacement for SAS 70 Type II), and are HIPAA and PCI Compliant. While specifications of each facility vary slightly, all are designed to be highly secure and fault tolerant. For example, our facility features the following:

Security

- Our data center maintains a ‘round the clock onsite Network Operations Center (NOC), which monitors the security and video systems 24x7x365, and provides access control for physical security.
- State of the art data center ID system and security including video surveillance and recording.
- Multi-level identity verification, including biometric scanning, card keys, and badge authentication.
- Real-time IPS and multilevel firewalls that comprehensively auto block sources of rejected traffic.

Power (2N+1)

- Multiple utility feeds from separate substations with diverse building entry
- 11 generators providing a total of 7 MW of power, with in-ground fuel tanks to provide uninterrupted power for several days of outages. Fuel contracts guard against long-term outages.
- A+B feeds to each cabinet with A+B computing equipment, with each feed backed by independent N+1 power paths, including breakers, UPS systems, generators, and main feeds.
- A connection to the most reliable power grid in the state through quad vaults on 4 feeds.

Environmental Controls (N+1)

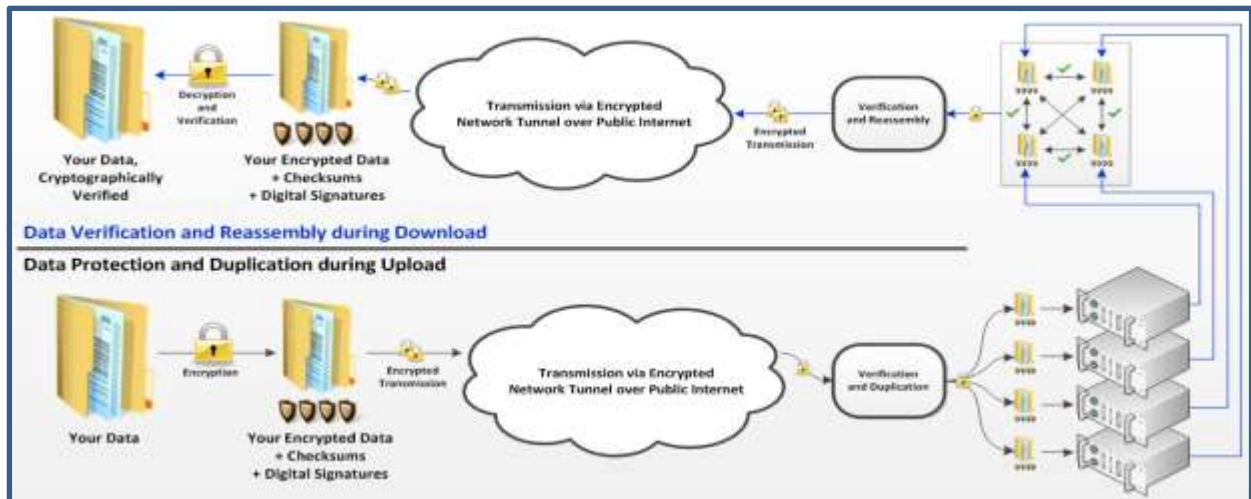
- Environmentally friendly chilled water cooling, fed by redundant water sources (private well, city main), and powered by redundant pumps and paralleled 500-ton cooling towers.
- Redundant Liebert Air systems providing consistent temperature and humidity range throughout the 70,000 square feet of datacenter space.
- Continual environmental monitoring in each cabinet and through the data center, with threshold alarms monitored by the 24/7/365 NOC, providing fast resolution of anomalous conditions.

Network (2N)

- Redundant Cisco BGP routing and switching infrastructure with cold spares on site. If equipment failure occurs, there is no interruption of service.
- 62 Gbit/sec Internet connectivity, delivered through multiple independent fiber rings and lines. Dual feeds of all aggregation routers ensure 100% uptime - some of the best in the business.
- Avaya ANS BGP4 management system optimizing the routes on the network in real time, 7000 times per minute based upon trace route performance, to ensure low latency and high throughput.

Unique Data Integrity Assurance System

Our data integrity protection systems are second to none. Our end-to-end 256-bit checksums “tag” our client’s data with cryptographically verifiable identifiers, and these checksums are then used to verify the integrity of the data throughout the entire process. If corruption within a particular block is detected, a redundant copy of that block is used to automatically repair the corruption for our client.



The redundant copies of the data are split across physically separate raw storage devices each located in physically distinct storage subsystems. Storing the redundant copies physically far away from each other ensures that clusters of disk failures due to localized vibration, enclosure failures, or IO controller failures do not affect more than one redundant copy of the data, providing an unparalleled level of protection for our client’s data.

In addition to automatic detection and repair upon data access, all data is periodically verified against their end-to-end checksums to proactively identify and automatically repair silent data corruption.

As an additional measure of data integrity assurance, every data block backed up to our cloud is digitally signed by our client’s encryption key and then verified during restore. This provides cryptographic assurance that our client’s data has not been tampered with by anyone and is 100% identical to what was originally backed up.

Help Desk

OUR MISSION

Datacore wants our clients to experience beyond exceptional customer service. Committed to this goal, Datacore has a team of certified professionals to assist clients with technical solutions that work to attain their business and technology goals. Clients will also benefit from Datacore being a veteran owned company, thus we are committed to keeping all operations U.S. based. Datacore has built a world class Help Desk where employees are trained and certified on a number of systems and programs to better serve your client's growing needs and ALL engineers and in house technical staffs are Datacore employees or partners. Nothing is outsourced.

At Datacore, we take the time to become familiar with client's staff and design a help desk program based on their needs. Through extensive research and dedication to clients, we have developed methods that utilize the latest technology to offer help desk solutions that increase productivity while reducing current MIS budgets.

OUR PLATFORM

Everyone at Datacore knows and understands we succeed one client at a time, and as our client you will undoubtedly find success with this platform as well. In order for US to succeed, we have to make sure YOU succeed. Our understanding of this is what drives us to provide the most flexible Help Desk options for our client's needs and back up those options with unparalleled quality and support. We provide our clients with an enterprise level web-based service order system for maintaining and tracking their service, as well as full escalation and approval procedures.

OUR HELP DESK TOOLS

- Custom Web-Based Help Desk Tracking System.
- 24/7 Emergency Remote Access
- International Web-Based Rescue
- 24/7 Proactive Hardware and Software Monitoring

OUR HELP DESK NUMBERS

- Help Desk average wait time is less than 30 seconds
- Average calls dropped is 1 in every 500
- Number of outsourced engineers is ZERO
- Average 1st call resolution is 98%
- Immediate assistance provided for 99% of all calls
- 95% of all calls are resolved within 4 business hours

OUR HELP DESK TRAINING AND CERTIFICATIONS

- Linux
- MAC
- Microsoft
- VMWare
- Citrix
- Smart Phone Operating Systems
 - Including every feature from remote access and chat to online video conference support

OUR HELP DESK RESPONSE AND RESOLUTION TIMES

The following table shows the targets of response and resolution times for each priority level:

Trouble	Priority	Response Time (in hours)	Resolution Time (in hours)	Escalation Threshold (in hours)
Service not available	1	Within 1 hour	ASAP – Best Effort	1 hours
Significant degradation of service (critical functions affected)	2	Within 2 hours	ASAP – Best Effort	2 hours
Limited degradation of service (limited functions affected, business process can continue)	3	Within 8 hours	ASAP – Best Effort	8 hours
Small service degradation (business process can continue)	4	Within 8 hours	ASAP – Best Effort	24 hours

HELP DESK HOURS

Standard working hours for Datacore's desktop Help Desk, are Monday through Friday 7:30am to 5:30pm Eastern Daylight Time (EDT). Emergency services performed outside of the hours of 7:30am – 5:30pm EDT Monday through Friday, excluding public holidays, shall be subject to additional fees.

Datacore BDR: Hardware Specifications

Intel Sandy Bridge Processor

- Intel Turbo Boost Technology
- Intel Virtualization Technology
- Intel Fast Memory Access
- Quad Core 64 Bit

Western Digital Hard Drives

- Maximum performance enterprise hard drives
- 6 Gb/s transfer speeds

Intel MINI-ATX Mother Board

- Eco-friendly Small Form Factor
- Intel Active Management Technology (SOL)
- Allows for remote system access, even if the system is locked up or hung
- Two SuperSpeed USB 3.0, SATA 6 Gb/s technologies
- Two eSATA 3.0 Gb/s Ports
- Support for up to 16 GB of RAM
- Advanced RAID Technology (RAID 1,0,5)

Datacore Mini Case - 12.2" x 7.78" x 10.63"

- Front bezel key lock
- Four Hot swappable Drive Bays
- 230W Power supply
- Secondary NIC (Network Interface Card)

BDR Basic 2TB	2961841	\$ 949.00
BDR Standard 4TB/2TB usable RAID 1	2961843	\$1299.00
BDR Pro 6TB/4TB usable RAID 5	2961847	\$1599.00
BDR Advanced RM 8TB/6TB usable RAID 5	2916211	\$2999.00