

Virtualization Support. Real Backups of Virtual Environments.

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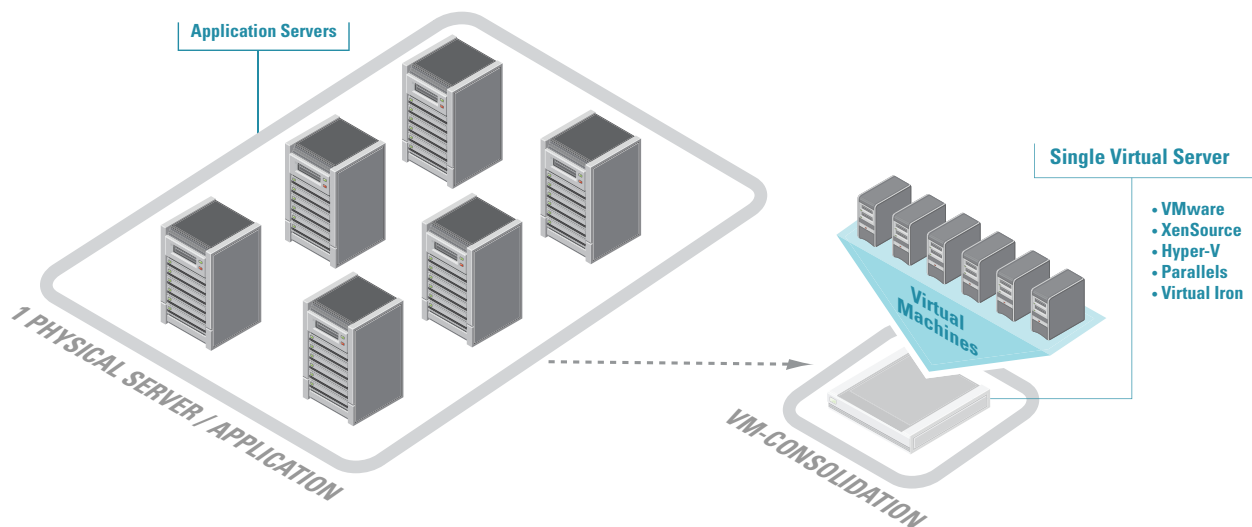
Asigra enables enterprises to bridge the physical and virtual worlds, without having to pick pointsolutions for each. As the virtual server market matures and becomes part of the 'new world order' of cloud computing, companies that choose to select multiple virtual server platforms inside their clouds can leverage Asigra to protect leading virtualization platforms such as VMware, Citrix, Microsoft, Parallels, and Virtual Iron.

If an entire virtual server is backed up with Asigra, new virtual machines are automatically protected by the backup policy. Furthermore, live virtual machine backup allows administrators to back up virtual machines in the middle of production operations without disruption to production windows.

Virtualization Challenges

Server consolidation is driving deployment of virtualization across enterprises of all sizes. However, to fully realize the benefits of virtualization, organizations must consider their information recovery management strategy. Traditional backup and recovery strategies are notadequate to deliver the granular recovery demanded by the business. More importantly, the cost associated with traditional or

agent-based technologies essentially negates many of the costadvantages of virtualization. Asigra delivers a simple, elegant and cost-effective agentless solutionthat enables the enterprise to optimize their virtualization strategy while achieving superiorinformation protection and recovery management without performance degradation.



The Benefits of Agentless Backup

Traditional agent-based backup and recovery forces the enterprise into a series of unattractive choices. Agent-based technologies pollute the virtual environment. Agents, by their nature, lack cohesion. The need to physically install and manage agents on each application within the virtual server and each machine on the LAN is time- and labor-intensive. A single agent adds as much as 16% server overhead to each application. Add to that the security risk and cost of each agent and it becomes quite clear, agent-based backup and recovery dramatically impacts the TCO and performance of the virtual environment. From an information recovery perspective, the trend towards virtualization has a major impact on information recovery management:

- Applications run isolated and utilize the hardware more efficiently. Before virtualization, any backup activity could likely afford to take away some hardware resources from the underutilized application server (CPU power, RAM); with virtualization this may add up to too much. A small 5% resource utilization for a backup agent on a physical machine may go

unnoticed, however in a Virtualization Server running 10 O/S instances, this will add up to 50% resource utilization (on top of the fact that the virtualization server is not under-utilized anymore, as the physical machine was).

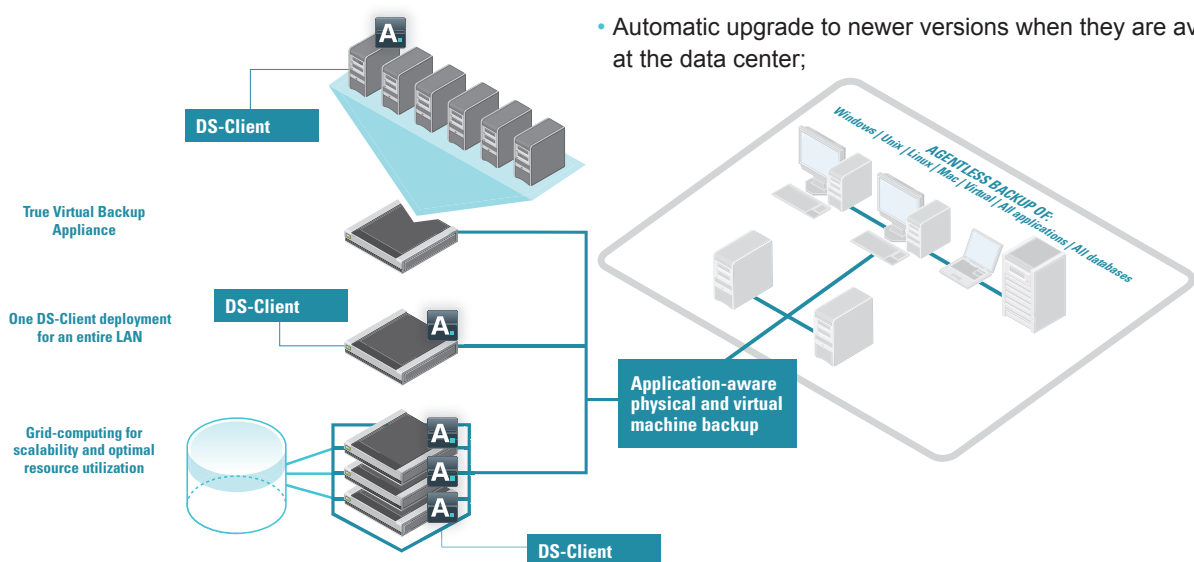
- Any hardware connection will likely be abstracted away. Data protection software cannot rely anymore on the physical location of data remaining fixed, as storage resources may be migrated at any time by IT administrators to improve processing efficiency.
- The introduction of console-less (COS-less) virtualization servers prevent backup applications from running on the virtualization host operating system.
- Most applications are expected to be available as a “virtual appliance,” isolated from other applications. This applies to backup applications as well, where an ability to deploy a backup appliance on both physical and virtualized servers, as well as centralized deployment without any agents, is required.

Backup and Recovery Built for Virtualized Server Environments

Asigra’s solution addresses the performance, management and cost shortcomings of alternative agent-based backup and recovery solutions for protecting virtualized server environments by providing the following:

- Maximized cost savings by significantly reducing backup and recovery hardware and software requirements;
- Unified enterprise-wide solution with unlimited protection of physical/virtual servers, workstations, desktops and laptops organization-wide without agent-based cost penalties;
- A pro-virtualization capacity-based pricing model;
- Simple, centralized management interface to ensure compliant backup and recovery across all physical and virtual environments throughout the enterprise;

- Backup and recovery optimized to greatly reduce management, CPU and memory resource impact on servers;
- Live VM backup;
- Compliant VM backup;
- File-level recovery at the VM and guest OS level;
- Any-to-any restore capability (P2P, P2V, V2V, V2P);
- Automated mass deployment and single interface management across distributed environments;
- Comprehensive enterprise application support;
- Extensive mixed physical/virtual OS interoperability;
- Next generation features including global data de-duplication, Continuous Data Protection (CDP), grid-based scalability, intelligent data retention and no-cost datacenter replication;
- Automatic upgrade to newer versions when they are available at the data center;

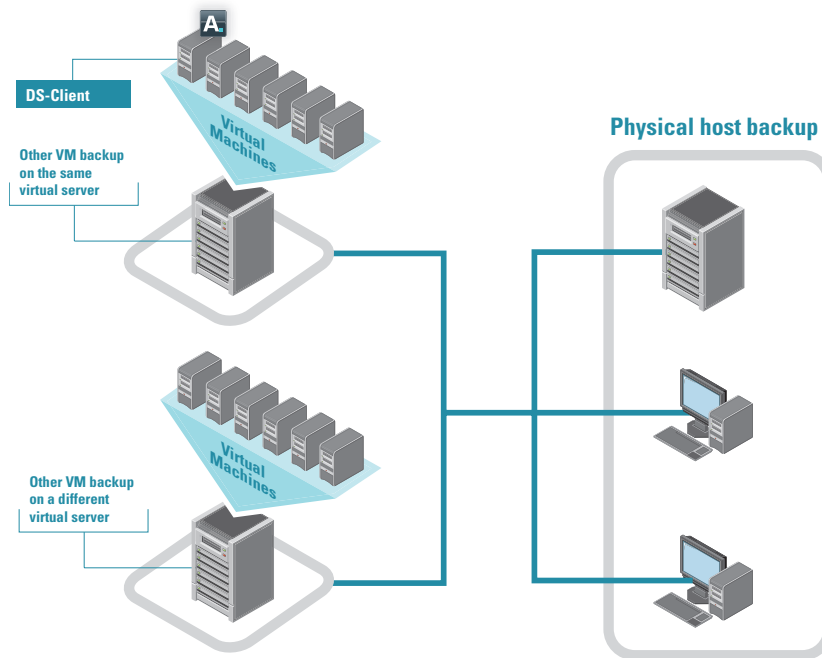


Agentless DS-Client in a Virtualized Environment

As an agentless information recovery application, the Asigra DS-Client is ideal for integration into complex virtualized environments:

- Hardware resources are not “stolen” from production applications as no backupagents are used.
- Seamless migration between physical and virtual: agentless backup technology does not depend on specific hardware layouts (e.g., tape devices attached or specific hardware resources available) and is able to connect to both physical and virtual machines.

- Application-aware backup – the DS-Client’s agentless capabilities expand well beyond pure file backup – it supports System State/Registry/Services Database as well as providing a wide range of database and application support, like Oracle, Microsoft SQL Server, DB2, PostgreSQL, MySQL, Microsoft Exchange, Microsoft SharePoint.
- Highly flexible and scalable: agentless backup is the only backup technology supporting true virtual backup appliance creation. DS-Client deployments can range from virtual appliances, to dedicated backup servers for larger environments up to grid-computing deployments for redundancy and optimal backup resource utilization in very large deployments.



A True Virtual Backup Appliance

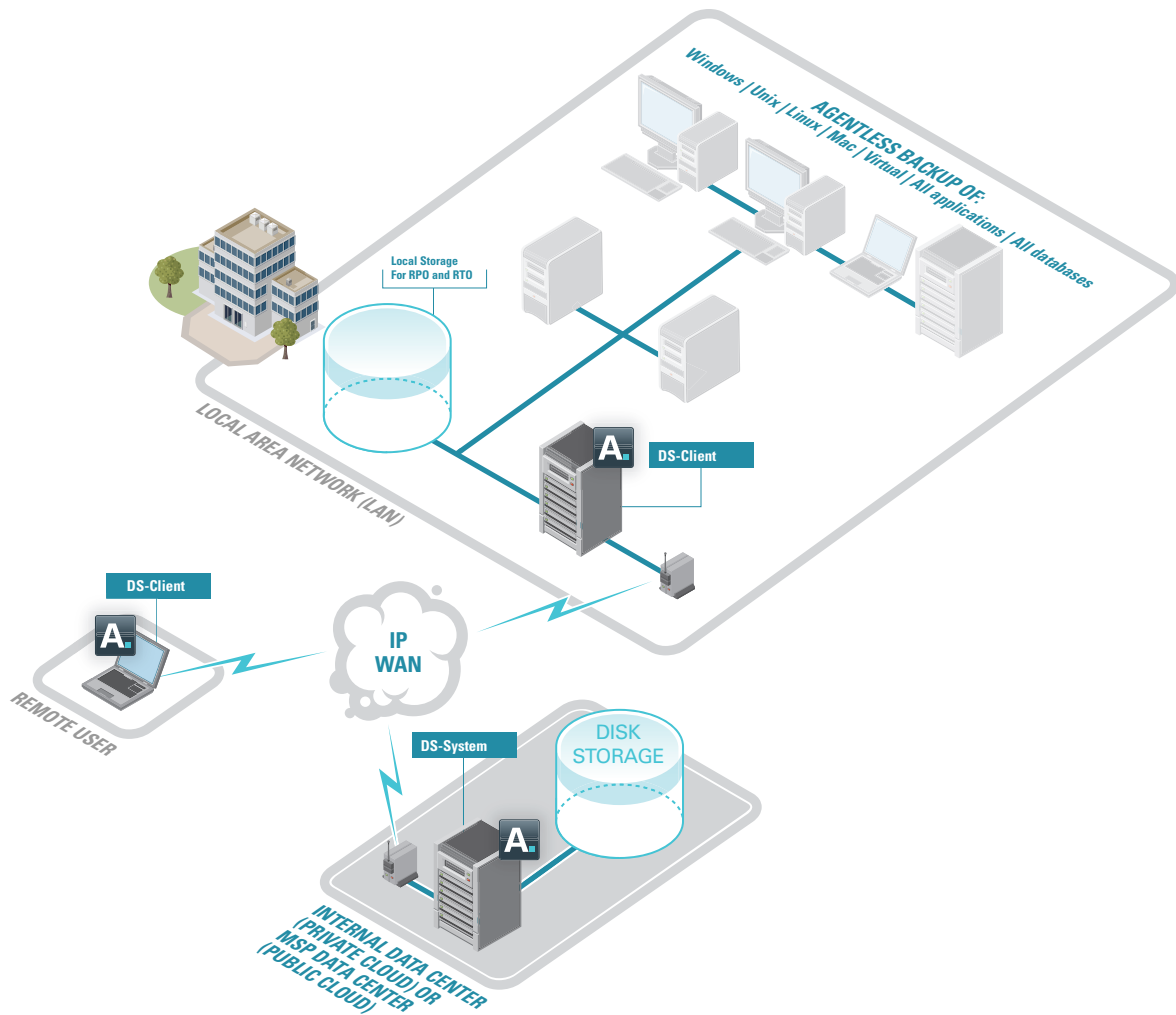
The Asigra DS-Client is a pure software information-recovery application. As such, a DS-Client can be installed on any major O/S, including full support for installing on and backing up virtual machines. It functions as a true virtual appliance:

- DS-Client data transmission takes place over standard TCP/IP; it does not require any specific hardware or O/S integration. As such, the DS-Client can be installed on a virtual machine.
- The agentless design of the software allows a single DS-Client installed on a virtual machine to backup its own O/S, other virtual machines, as well as other physical machines.

- Support of mixed Windows/Unix networks can be easily achieved by using both Linux and Windows DS-Clients, both being virtual-appliance ready.

DS-Client agentless backup/restore, as well as running the DS-Client as a virtual appliance, has been tested and certified on a very wide range of virtualization platforms:

- VMware ESX 3.0, ESX 3.5, ESXi, Workstation and Server
- Xensource
- Microsoft Hyper-V
- Parallels and Virtuozzo Containers
- Virtual Iron



LAN backup using an agentless DS-Client

The DS-Client is performing application-aware agentless backup and restore. It does this by using the native backup API for every type of resource, allowing for best performance and compatibility.

As a result, there is significant flexibility when deploying the DS-Client in any environment:

- The DS-Client can always backup the data on the machine where the DS-Client is installed.

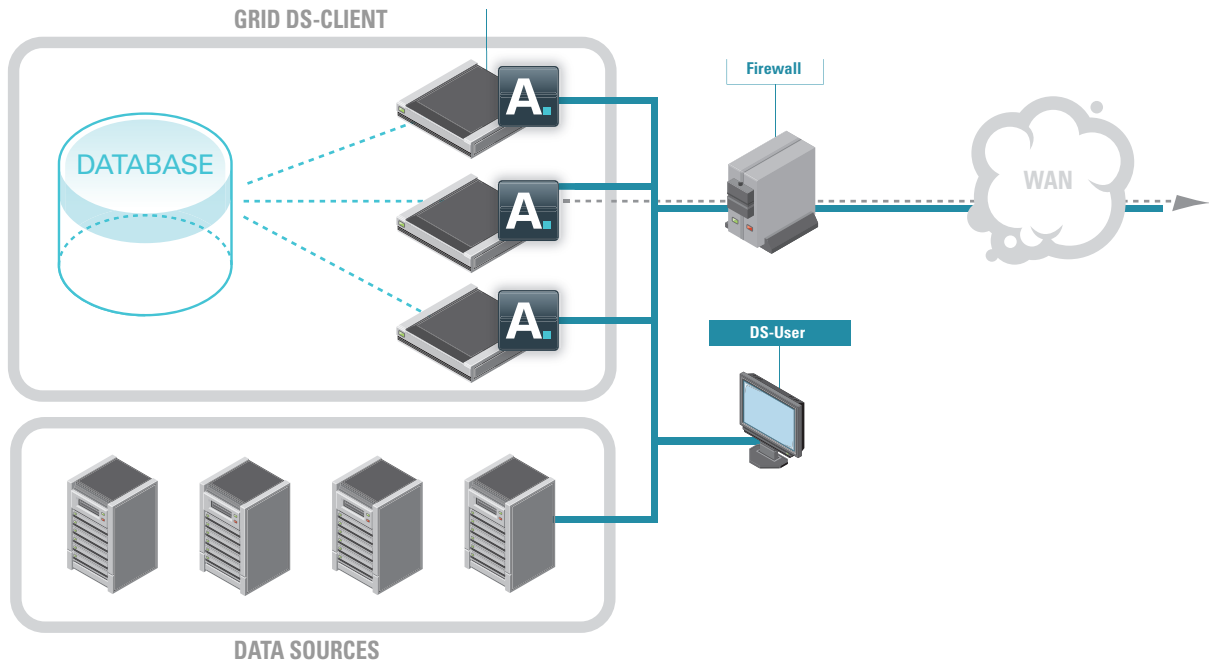
Installing the DS-Client on the source machine directly is always an option, especially for laptop backups. The DS-Client contains built-in functionality specifically targeted for laptop use, like backup on network connectivity and CPU usage throttling during scheduled backups.

- Due to its agentless backup capabilities, a single DS-Client can backup other machines and applications without any need of installing additional software on the source. This means only one DS-Client needs to be installed on the network to protect all the data. This includes any physical as well as virtual machines installed on the LAN.

- Being a software-only solution, the DS-Client can be installed on laptops, on existing servers/desktops (for small remote sites) or on dedicated servers (for larger deployments).
- The DS-Client license is extremely friendly for Data-center and enterprise environments.

The DS-Client is licensed for unlimited deployment: no per CPU/per seat/per Memory/per computer/ licensing. Deploy the DS-Client as it is best for data protection, without being limited by licenses.

- DS-Client management is done through a central remote GUI (DS-User). All installed DS-Clients can be configured and managed from one single central location.
- The DS-Client comes by default with the ability to backup a wide range of data center applications and databases, without any need for additional licensing: Microsoft SQL Server, Microsoft Exchange, Oracle (including SAP-certified backup/restore), DB2, MySQL, PostgreSQL, VSS-support, System State & Services Database (including BMR support to dissimilar hardware), Netware, AS/400, Linux/Unix, Mac OS X.



Grid computing – redundancy and automatic load distribution

The DS-Client scales from very small installations—laptop or stand-alone desktop/server installations—to large installations, handling the backup of complete LANs. Specifically for data-center environments, the DS-Client supports automatic processing power distribution and redundancy using a grid-computing configuration:

- A central database containing information about what to backup is shared among all the grid nodes. Any node within the grid can perform the backup process, allowing for redundancy (even if a node is not functional, another node can still perform the backup).

- A grid DS-Client can function with as little as one node when all others are not functional.
- Load distribution is done automatically: the next backup job is taken by the node that finishes a backup first. Activities are distributed to nodes according to load. This results in significantly smaller backup windows by making optimal use of available processing resources for backups without the need of additional manual configuration and tuning.
- A Grid DS-Client is managed centrally via the DS-User, together with other grid and standalone DS-Client deployments.

Virtualization-Specific Agentless Integration

The DS-Client integration with virtual machines goes beyond virtual backup appliance support and application-aware agentless backup. The DS-Client integrates natively with VMware

and XenSource virtual machine servers, providing seamless protection of virtual machines at a VM-level.

VMware Agentless backup

In addition to VCB integration, Asigra offers the unique capability of agentless VMware backup for

ESX 3.0 and 3.5, including agentless backup for the COS-less ESXi servers and backup through the

Virtual Center server:

- Complete agentless backup in hot mode, allowing VMware VM-level backup from both physically installed DS-Clients and virtually installed DS-Clients (no need for a physical backup host).

- Works with any kind of back-end storage for the ESX server (SAN/NAS/DAS/iSCSI).
- Fully automated and HA aware – can backup an entire Virtual Infrastructure deployment through the Virtual Center. Any new virtual machines and templates can be discovered and backed up automatically.
- Full support for original and alternate restores, support for COS-less ESX servers and support for pure-file restores (e.g. Single VMDK restore without loading the entire VM).

VMware VCB integration

The DS-Client integrates with VMware Virtual Consolidated Backup and provides the ability to use the VCB tools to perform backup and restores of virtual machines, both at a VMDK-level and at a file level as supported by VCB.

Asigra VCB integration allows for GUI-based virtual machine discovery and selection and the provided pre/post programs allow for integrated VCB-based data protection.

Hyper-V Agentless Backup

Asigra simplifies and automates backup and recovery for Hyper-V users, providing the benefits of highly efficient data protection without the need to install I/O, memory and management intensive backup software on virtual machines targeted for protection. Asigra ensures that customers who are upgrading or migrating to Windows Server 2008 Hyper-V can continue to enjoy the benefits virtualization brings without the performance, cost and management impact of traditional agentbased backup software solutions.

Virtual Iron Agentless Backup

Asigra's pro-virtualization agentless backup and recovery solution for Virtual Iron Software allows virtual server environments to perform as promised while providing the industry's most powerful information recovery, thus addressing the shortcomings of alternative backup and recovery methods for protecting virtualized server environments.

XenSource Agentless backup

Agentless backup/restore integration includes XenSource Server native backup API integration:

- Complete agentless backup & restore functionality
- Using secure native backup API, with authentication and data encryption
- Original and alternate restore support
- Option for automatic discovery of newly created virtual machines and templates
- Incremental forever, block-level incremental backup

Parallels Agentless Backup

Asigra is certified for use with Parallels Server for Mac . Asigra software installs on one Mac host with Mac OS X, and a single copy of the client software running on Mac OS X is installed at each location targeted for protection. There is no need to install software on any virtualized server (or any physical machine) targeted for backup.

Already Cloud Ready.

About Asigra.

Leading organizations reduce costs by applying cloud computing to backup and recovery with **efficient, cost-effective** and **transformational** solutions from Asigra. Customers consistently redirect savings derived from our approach to projects of higher strategic and personal value, many of which have been on-hold for a year or more. The positive business outcomes made possible from a low-touch agentless architecture are revealed through Asigra's Day One ROI™ - an exercise that delivers enormous value with little up-front investment.

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