

Likewise Storage Services provides OEM NAS developers with file services and security

Linux and Unix appliances can provide full file, identity and security services for Windows clients

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Demand for NAS devices is surging because of the growth factors involving unstructured data, virtualization and big data. While Linux and Unix are the favored environments for appliance manufacturers, the new requirements of future Windows operating systems for Server Message Block (SMB) 2.2 represent a major challenge for developers.

Likewise has a long-term working relationship with Microsoft and an extensive code base for supporting a wide variety of file systems and identity services directories. Organizations need more control of their data at the appliance level than can be provided by block storage. Requirements include access security and breach reporting, regulatory and legal compliance and more efficient storage management practices. As requirements for NAS increasingly offset block devices in virtualized environments and performance and management capabilities become strong differentiators, a growing number of major OEMs are turning to Likewise and its Likewise Storage Services, Likewise Identity Services and the Likewise Data Analytics and Governance application.

The Challenge

There is an explosion in unstructured data. Digital data in all forms is more than doubling every two years. In 2008, IDC predicted that the annual growth rate for unstructured data in data centers would exceed 60 percent through 2012. More recent estimates indicate that IDC's prediction was somewhat conservative. One estimate indicates that by 2012 unstructured data will consume 80 percent of data center storage.

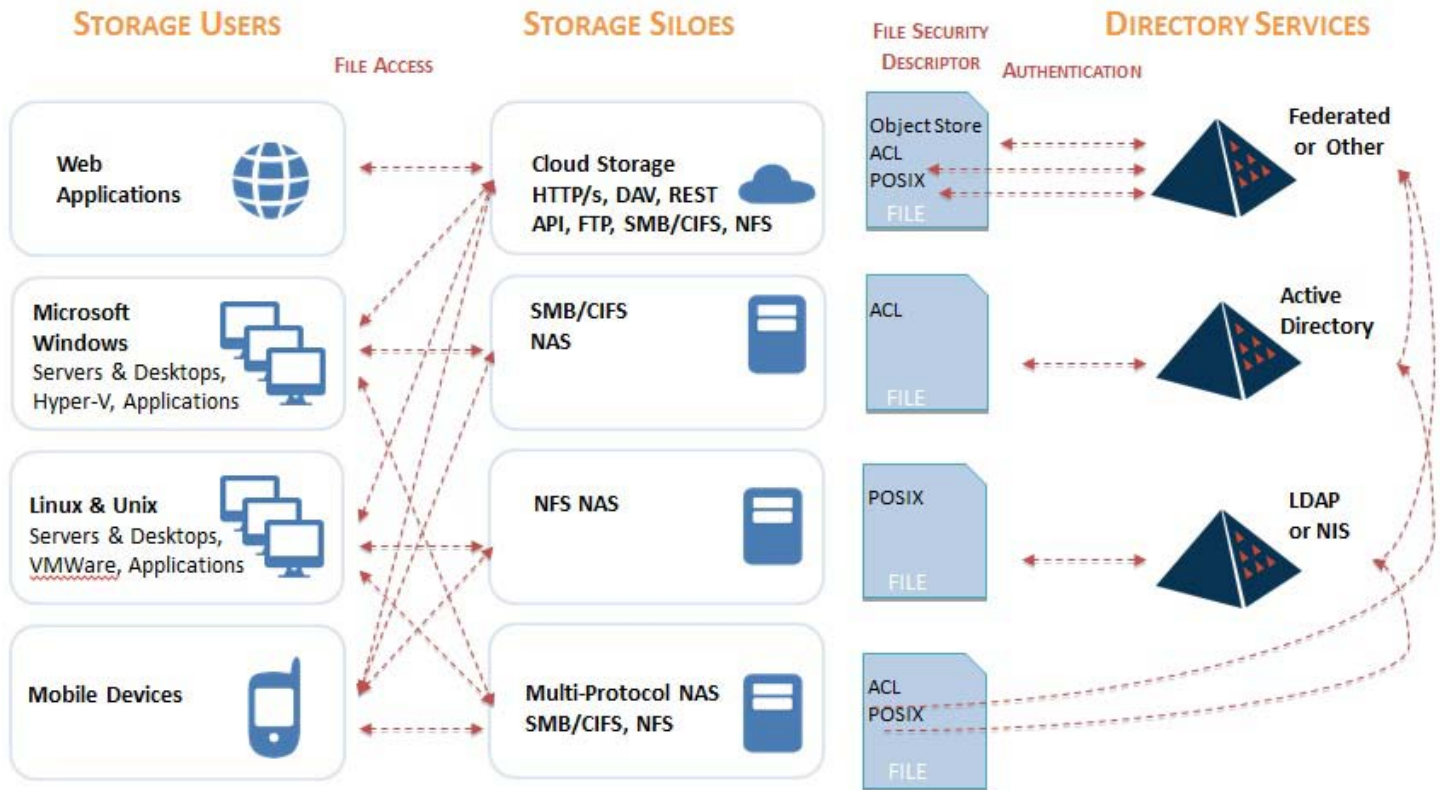
There is a need to turn unstructured data into information. Despite rapid data growth, most enterprise organizations have little understanding of their unstructured data. The risks and costs due to this lack of understanding include losing valuable data, not effectively exploiting assets, security risks and the inability to meet compliance, legal, and regulatory requirements.

As unstructured data increases, so does the complexity of providing access with security. Users need to easily access data from anywhere. The explosion in the use of mobile data devices, such as smart phones and tablet computers, is driving an increased need for remote access to corporate data. In addition, organizations want to secure their data by connecting data to identity and incorporate it into their identity management infrastructure.

IT management must be able to demonstrate that data is secure. They must be able to meet auditing and regulatory compliance requirements, comply with corporate security standards and protect intellectual property. In many organizations network file access, security, and identity are managed in multiple disparate siloes. Within each silo, user access to data must be provisioned for each protocol, directory service or operating system, creating a complex and often error prone array of security policies and authentication mechanisms.

Likewise Storage Services, Likewise Identity Services and the Likewise Data Analytics and Governance application give OEMs the opportunity to meet these challenges.

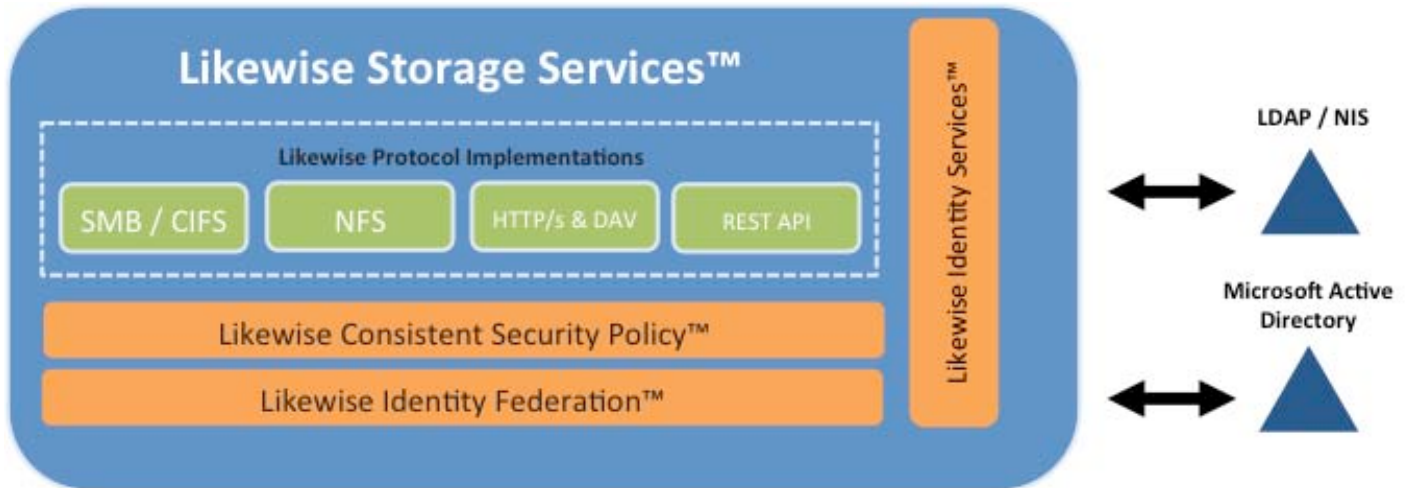
Rampant opportunity for configuration problems/conflicts



Likewise Storage Services

Likewise Storage Services gives OEMs the ability to provide secure, cross-platform, NAS-enabled storage across Windows, Linux and Unix. Likewise Storage Services and Likewise Identity Services are based on code originally written for Likewise Open, an open source implementation of SMB networking. The original Likewise Identity software incorporated Samba's Winbind code, but due to a number of licensing and technical challenges, Likewise opted to create a new, clean-room implementation with a more modern, modular architecture that pays particular attention to clarity, extensibility and usability. The architecture allows ISVs to easily incorporate Likewise code into their solution and includes a commercial license. By providing a well-developed Linux and Unix code base that exposes file services to Windows and other clients, OEMs can quickly provide these features without impact to the core competencies of the developers who are implementing the underlying storage functionality. Unlike Samba, Likewise software is built on a multithreaded architecture and is designed to be multiprotocol—SMB is just one of the drivers in Likewise Storage Services.

Likewise provides an extensive and efficient approach to the intersection of file services, security of access and analytics. As shown in the following diagram, the storage services platform provides an interface between all file systems and user directories, with inline protocol security, access control and analytics. With support for SMB 1.0, 2.0, and 2.1, NFS 3.0, and cloud-critical REST APIs, the code base takes the heavy lifting of file services, security and metadata analytics off developers' shoulders. Likewise has support pending for SMB 2.2 and NFS 4.1 with pNFS as well as HTTP/s and DAV (WebDAV). Consolidating unstructured data into a common location makes it easier for your customers to tap their unstructured data with big analytics or other applications for competitive advantage.



Likewise Identity Services

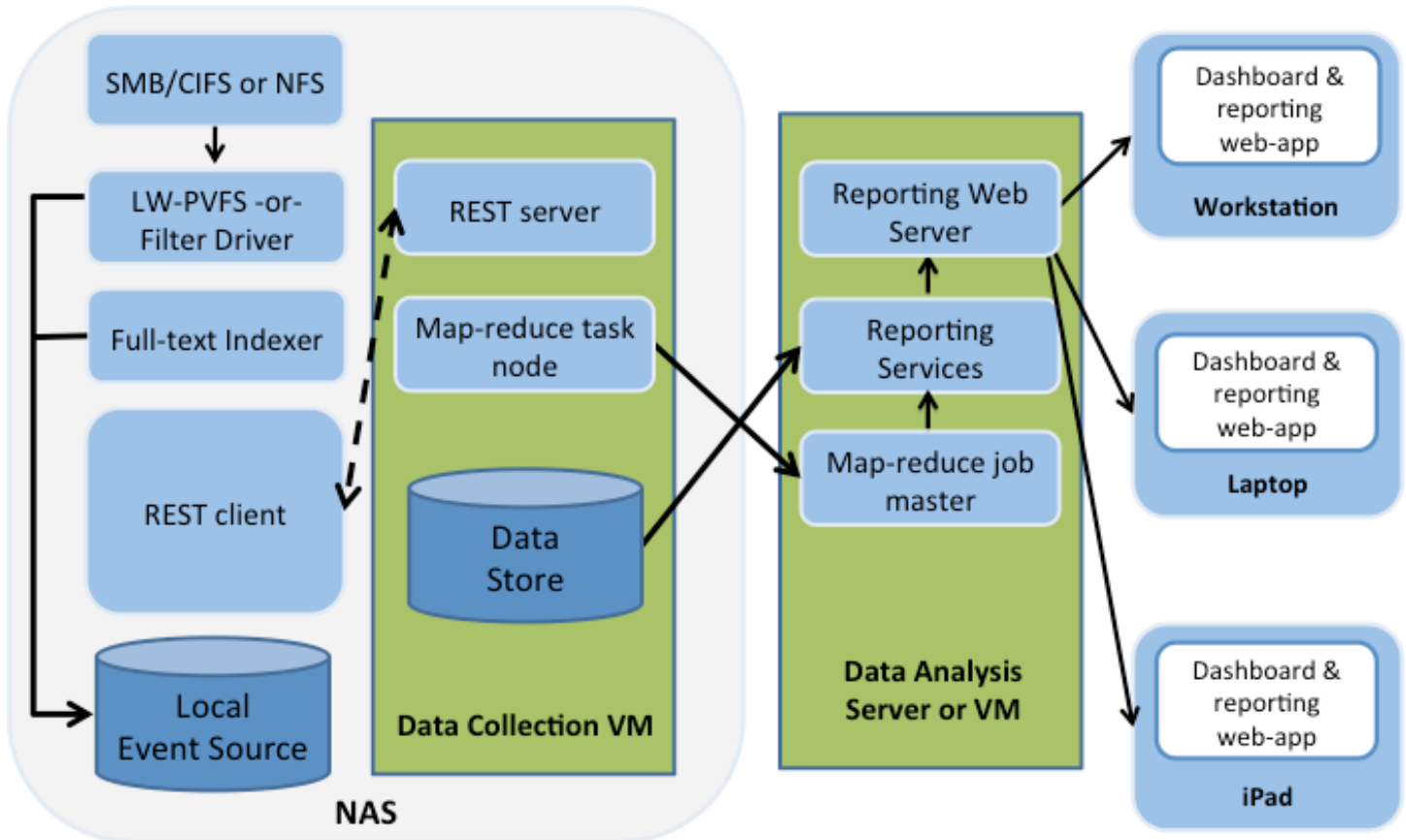
Consolidating unstructured data housed in silos into cross-platform, multiprotocol file servers or NAS systems sets the stage for a common security model. Likewise Identity Services provides a single security system to manage identities, control access, and enforce consistent data-security policies, including those for file servers. By uniting storage, identity, and security, you can protect sensitive unstructured data while making it available to those who need it.

Many organizations continue to use multiple authentication and access control systems, such as NIS or LDAP for Unix machines and Active Directory for Windows computers. Separate authentication and access control systems make it difficult to implement uniform, consistent security policies to control access to unstructured data. Putting in place a uniform security model and using a common identity management system to enforce a consistent data-security policy addresses not only who can access what data but also what actions may be taken on the data. Likewise Identity Services provides that single authentication and access control system. Likewise Identity Services is included as part of Likewise Storage Services but is also available as a stand-alone product offering.

Likewise Data Analytics and Governance Application

Unstructured data is ubiquitous, making management of this rapidly growing class of data increasingly difficult. The Likewise Data Analytics and Governance application adds critical metadata to unstructured data, specifically associating: 1.) Account repositories (i.e., AD, LDAP, NIS), and 2.) Unstructured data on NAS volumes (i.e., NFS, CIFS operations as well as Unix- and Windows-based security settings). By associating identity and unstructured data you can answer fundamental questions, such as who is accessing your data, who has been provisioned to access your data, what are they doing to the data, when and where are they doing this, are they having problems, and provide overall transparency into the infrastructure. Secure reporting helps demonstrate regulatory compliance and show chain of custody over tracked folders and files. Monitoring and auditing unstructured data to identify security vulnerabilities, risks, access rights, access patterns and levels of protection is problematic because security information and event monitoring tools lack tight integration with identity management systems and file servers. The Likewise Data Analytics and Governance application provides event monitoring and auditing that is close to the data and tracks access patterns and logs changes to sensitive files. Used in conjunction with both Likewise Storage Services and Likewise Identity Services, it can bring these services to all your data in a cohesive, consistent fashion. The Likewise Data Analytics and Governance application allows you to verify who has accessed what and when and demonstrate chain of custody in an audit. It also provides for alerts in cases of unauthorized access attempts.

In the following diagram, SMB/CIFS or NFS messaging is processed through to local event storage, and communicates via a data collection Virtual Machine (VM). By using REST, a highly efficient data collection procedure communicates through the data collection VM through to a data analysis application running on either a dedicated server or VM. Finally, dashboard reporting can be accessed through the web server to clients running a web application.



The Likewise Data Analytics and Governance application works with Likewise Storage Services and has available adapters to support NetApp, EMC-Celerra, and other NAS filers.

Development Challenges

Likewise helps OEMs avoid dealing with the challenges of developing their own storage, networking and identity services protocol stacks. Unlike other options available, Likewise has developed their software specifically for the OEM market. Because of the multithreaded, multiprotocol architecture, OEMs can extend their systems beyond basic SMB file serving provided by competing products.

Likewise is providing support for Microsoft's SMB 2.2, which will be supported by Windows 8 Server. SMB 2.2 is designed for performance and continuous availability. It includes direct support for specific server workloads, including Microsoft SQL Server, Hyper-V and SharePoint, allowing these applications to deliver better performance, reliability and scalability. This potentially makes file-based storage competitive, in terms of performance, with block-based storage for these applications. It will allow certain state information to exist beyond the failure of a single node in a scale-out cluster. It supports multipathing and allows a single authenticated session to be virtualized across multiple connections. SMB 2.2 also provides automatic failover for clustered servers. Because Likewise is including support for these and other SMB 2.2 features, OEMs can quickly and easily incorporate these new performance and reliability features into their offerings.

Our Take: SSG-NOW Assessment

Likewise has provided critical storage software support to many of the biggest name-brand OEMs in the business. The market is seeing a growing number of new companies entering the midrange and high-end SAN and filer business, many with exotic combinations of DRAM, solid state drive and hard drive hybrids. As these companies move into converged storage requirements, with more and more workloads that require unstructured file data, they will increasingly need to look for support in this area. Likewise is tightly woven with Microsoft both by proximity and commitment. Many appliance developers will find it convenient to work through Likewise to access Microsoft's current and future products. In turn Microsoft is committed to providing Likewise support to its current and future Server Message Block protocols.

Appliance developers are highly focused on differentiators in storage architecture, caching and tiering, throughput management, high availability and self-healing. By using Likewise, the product development process is accelerated by eliminating the internal development of file services, security and analytics. OEMs choose Linux and Unix due to their low overhead and licensing, not because of their well-developed file services, Windows compatibility, and analytics. Likewise provides a series of critical functionality that fits into the Linux/Unix environment without impact. With Likewise, OEM vendors have an opportunity to differentiate in areas outside of their typical focus but critical to the success of their customers as enterprises seek to better manage the unbridled growth of their unstructured data.

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