



Windocks: a Modern, Open, Data Delivery Platform

Windocks Technical Backgrounder

Windocks is a port of Docker's open source to Windows used to modernize SQL Server workflows. Windocks is also an open, modern, data delivery solution that sources data from any enterprise storage system and delivers to any target environment, with support for both automated processes and user driven access.

Windocks History

Released in March of 2016, Windocks was the first implementation of Docker's source for Windows, supporting Windows Server 2012 and 2016 and all versions and editions of SQL Server 2008 onward. In March of 2017 Windocks became the first container engine to incorporate SQL Server database cloning based on the Windows file system. In early 2018 Windocks is releasing an Enterprise Management server for delivery of SAN snapshots to SQL Server instances on the LAN.

Windocks is used globally with scores of customers from Fortune 500 clients to small and mid-size enterprises, with a common focus on modernizing SQL Server workflows for development, test, QA, reporting and BI. In addition to SQL Server containers, Windocks also supports .NET, Java, and other open source technologies, and supports use of Continuous Integration pipelines based on Jenkins, Team City, and other CI servers.

Case Studies in SQL Server Modernization

A Fortune 500 Insurer uses Windocks on Azure to support access to secure production SQL Server data images, for development and test, reporting, analytics, and other purposes. Prior to using Windocks data environments were not readily available, and were updated infrequently for development and test. Now SQL Server production data images are updated daily, and include security for user/group permissions, data masking, and encryption to conform to corporate Data Governance policies. Use of containers has resulted in reduced Virtual Machine usage, with an average 5:1 reduction in VMs.

A global credit card payment processor uses Windocks on premises to support delivery of SQL Server containers with cloned databases for development, test, QA, and reporting. A key to this project was integrating containers into the corporate encryption system, based on Vormetric Extensible Key Management. This organization also found that Windocks open architecture and support for varied Storage Arrays simplified integration of acquired businesses. Windocks flexible user support is also helpful as some teams use Windocks with automated Jenkins based Continuous Integration processes,



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while others work with user-driven workflows. Like others, Windocks containers have produced bottom-line savings and an immediate financial return with fewer VMs and reduced Vormetric license costs.

A global technology firm uses Windocks SQL Server containers to support developers and testers with daily updated production data images that incorporate Data Governance policies. Workflows are focused on Jenkins based automated environments for testing. They also have realized significant simplification and savings through the reduction in number of VMs used.

SQL Server Containers and their limitations

Docker containers provide process and user isolation on a Windows or Linux host. Microsoft's containers include the operating system along with applications, running on a shared kernel. Windocks containers maintain the classic Windows application architecture, with application containers running on a shared Windows operating system. See the image below.

These architectural differences affect developers and IT operations in various ways:

Windows and SQL Server support: Microsoft containers are supported on Windows Server 2016 and Linux hosts, with SQL Server images including SQL Server 2016 Developer and SQL Server 2017. Windocks containers support Windows Server 2012 and 2016, with all versions and editions of SQL Server 2008 onward.

Compatibility with enterprise infrastructure: Microsoft's containers are a new application architecture that breaks compatibility with enterprise infrastructure. As a result, Microsoft containers do not support Windows authentication, or VSS and SQL writer based applications, and offer limited support of host or network based storage. A primary advantages of the Windocks architecture is how containers are easily added to existing systems and enable use of host and Pure Storage resources.

Maintainability: maintenance of Microsoft containers and images is complicated by Windows updates, which require containers and images to be rebuilt. Windocks containers and images are unaffected by Windows updates.

Scalability: Microsoft containers require more system resources, due to the Operating System footprint. Microsoft containers require approximately 100 MB larger RAM working set than Windocks containers. As a result, servers supporting Microsoft Windows containers will require roughly twice the compute resources of a Windocks server.

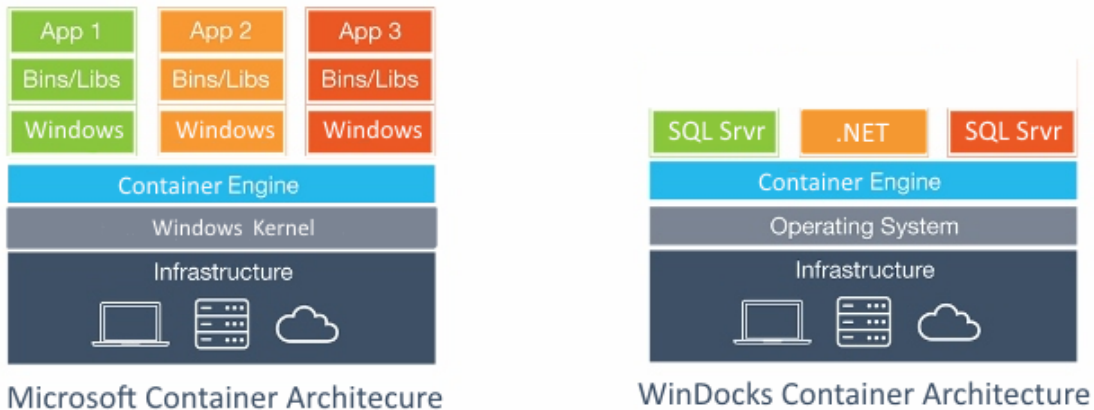
Economy: Microsoft SQL Server containers are licensed the same as a Virtual Machine, with each non-developer SQL Server container requiring a minimum 4 CPU core license. Windocks containers are delivered as named instances on the host, and are created by cloning a host installed SQL Server



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instance. As a result, Windocks containers are licensed with no additional cost under existing SQL Server licenses.

Linux support: Microsoft's container engine now supports use of Linux or Windows containers on the same host, using Hyper-V isolation. Windocks containers support only Windows based images.



Architectural differences between Microsoft and Windocks prevent images from interoperating.

It's a common misconception that SQL Server containers support the full range of SQL Server configurations and options, including replication, Azure stretch databases, and other advanced capabilities. The SQL Server data platform is incredibly rich in capabilities, but this range of capabilities includes a diverse mix of applications and services, including the database engine, SSRS, SSAS, SSIS, SQL browser, SQL Agent, and Azure integration. As a result, neither Microsoft nor Windocks containers offer complete parity in conventional SQL Server instances. Windocks continues to expand container support to address customer needs, and Microsoft is also expanding container support with an emphasis on Linux containers.

Windocks SQL Server containers supports most database engine options, including SMB, NFS, and SAN integration, database mail, TDE encryption, Extensible Key Managers, CLR Assemblies, DNS and server naming, secure (encrypted) secrets store for credentials, and many more instance level options.

SQL Server also includes a range of services, and similar to Microsoft Windocks currently supports a subset of SQL Server services. Notable Services not currently supported (as of Q1 2018) in SQL Server containers includes SQL Agent, Data Quality, Replication and Machine Learning. SQL Server Reporting and Analysis Service support are scheduled for release on Windocks in Q1 of 2018.



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SQL Server containers on premise and cloud, and Kubernetes

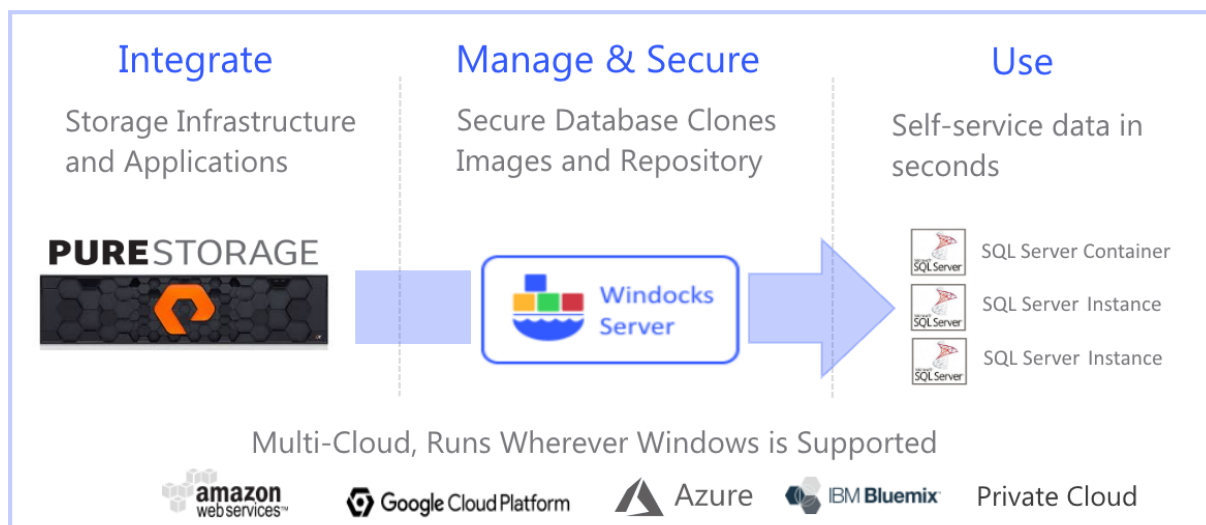
Both Microsoft and Windocks containers run wherever Windows and Linux servers are supported, including the public cloud, or on premise. Most users today focus on team level support with individual servers, but support for larger scale clusters is developing with support for Kubernetes, Mesos, and other cluster orchestrators. The preferred architecture for support of relational databases in a Kubernetes cluster is still developing at this time. Windocks has supported several Kubernetes projects, and is seeking customers and partners interested in developing cluster support.

Storage Array Snapshot delivery to SQL Server instances

While SQL Server containers offer speed and economy, containers don't support the complete range of SQL Server capabilities, including replication. Fortunately, Windocks supports delivery of Storage Array snapshots to any SQL Server instance on the LAN. Customers can benefit from a mix of SQL Server containers for the workflows suited for containers, and use snapshots with conventional SQL Server instances where support for SQL Server replication and other complex setups are required.

Windocks as a SQL Server data delivery platform

The Windocks Management Server is a web portal that runs on top of the container engine for complete enterprise data delivery. The Management Server includes user/group authentication, role based configuration and service menu, job scheduling, with support for both automated and user-driven data access. Importantly, Windocks manages the use of Storage Array volumes and mount points, and cleans up resources as containers and instances are refreshed with updated data.





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Authenticated users choose data delivery targets that can include Windocks SQL Server containers, SQL Server conventional workstations and servers, and Microsoft SQL containers. The example below illustrates a user option to select one or more databases from a data image, and mount those databases to a SQL Server instance on the `\\Test1` server. A terabyte class environment can be delivered with a fresh container, or mounted to an existing server, in less than a minute.

Repository	Tag	Image Id	Created	Attach	Target	Optional Port	Optional SA Password
	none	2e2ba76b-9af4-44f5-9b28-15e4baae0030	2/8/2018	Attach	Windocks Cont.	Optional Port	Optional SA Password
	none	a1a7be9f-951b-455f-bdfe-c84be78eac7a	2/8/2018	Attach	Test1\SQL2016	All or Subset of DBs <input type="checkbox"/> Ops-2-24-10 <input checked="" type="checkbox"/> Sales-2-24-10 <input type="checkbox"/> Audit-2-24-10	
	none	1c3713a4-9f2e-4442-9dfb-caecd8a1bfe	2/9/2018	Attach	MS Container	Target IP	Optional Port Optional SA Password

Get started with Windocks today!

Windocks provides Windows based enterprises a new option for modernizing SQL Server workflows and provides a modern, open solution for managing and delivering data for enterprise users.

Download the Windocks Community Edition: <https://windocks.com/community-docker-windows>

About Windocks

Windocks combines Docker Windows containers with SQL Server database cloning, for a modern, open data Delivery solution. Enterprises modernize application development, testing, reporting and BI with existing licenses and infrastructure, at a fraction the cost of alternatives.

For additional information, visit www.windocks.com, or contact Windocks at info@windocks.com

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