

## VM-Aware Intelligent Infrastructure Optimized to Power Microsoft SQL Server

Removing decades old storage constraints and complexity with next generation intelligent infrastructure, Tintri VMstore delivers intelligent infrastructure that maximizes the performance of databases while simplifying the tasks for people who manage them by ensuring database-level granularity, predictable performance, simplified troubleshooting, and 24x7 availability. Powerful copy data management and end-to-end visibility further extend the benefits to your databases running on VMstore, uniquely built to store, serve, protect, and manage databases and virtual machine data. VMstore delivers:

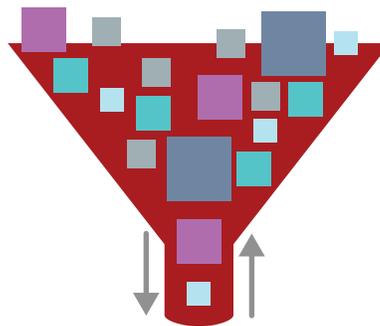
- Availability – Guarantee the performance of business-critical databases running 24x7
- Granularity – Troubleshoot performance issues with real-time monitoring and actionable insights
- Resiliency – Failover to one or more DR site(s) to offer databases multiple backup and restore options

### Availability with Performance Isolation

With VMstore, you benefit from individual performance lanes with auto tuning, and the elimination of noisy neighbors.

The value of virtualization comes from being able to support multiple mixed workloads on shared infrastructure. The ability to effectively isolate mixed workloads is a must. Unpredictable I/O patterns put high demands on virtualized infrastructure. An index miss that forces a complete table scan, combined with index rebuilds and database backups, can compete with record updates and thus reduce the responsiveness of the database. VMstore delivers the high IOPS at low latency needed for high performance databases while uniquely providing performance isolation for each I/O request. With VMstore, you can manually or automatically achieve guaranteed performance for each virtualized SQL Server database.

I/O Blender =  
Contention, Lack of Visibility



Performance Isolation

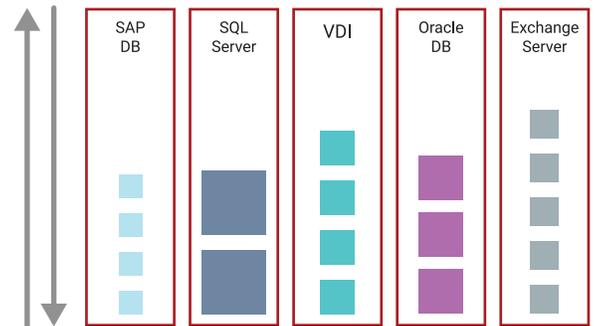


Figure 1 – Performance isolation delivers predictable performance for mixed workloads

### Granularity with SQL Integrated Storage

Tintri SQL Integrated Storage delivers unparalleled granularity that simplifies troubleshooting and accelerates resolution.

When a database encounters a performance issue, it often takes several database administrators (DBAs), plus storage, network, and virtualization admins to figure out the cause. However, since each administrator only has visibility into one part of the infrastructure, problems take longer to resolve, and your business suffers. SQL Integrated Storage ends guesswork as you go straight to the root cause of the issue and solve it in seconds.

VMstore provides end-to-end visibility across the entire infrastructure. With SQL Integrated Storage you, get unparalleled visibility at the database level with real-time insight into database-specific latency, IOPS, throughput, utilization space saving factors, and more. VMstore also integrates with SentryOne – a leader in SQL database monitoring to provide full-stack performance analytics across SQL Server and your virtual infrastructure.

### Resiliency with Database Protection

VMstore for SQL Server keeps your data safe and your business running 24x7.

DBAs rely on Microsoft and VMware tools, such as SQL Server “AlwaysOn” Availability Groups and VMware High Availability to make sure their databases are up and running all the time. However, hardware failures, human error, and even routine software upgrades can cause unexpected problems. Storage systems need to provide consistent snapshots to keep the data and log files in sync.

| Database - TrafficAnalysis |                         |         |                 |   |                      |
|----------------------------|-------------------------|---------|-----------------|---|----------------------|
| Overview                   | Settings                | Metrics | Database Files  | Snapshots   | Policy Errors        |
| Database                   | Database File           | IOPS    | Throughput MBps | Latency   | Logical Snapshot GiB |
| TrafficAnalysis            | Synthetic               | 0       |                 | <div style="display: flex; justify-content: space-between; font-size: 8px;"> <span>Host 0.0 ms</span> <span>Network 0.1 ms</span> <span>Contention 0.0 ms</span> <span>Flash 0.2 ms</span> <span>Disk 0.0 ms</span> <span>Mirror 0.0 ms</span> </div> | 0                    |
| TrafficAnalysis            | TrafficAnalysis_log.ldf | 836     | 4.74            | 0.3   | 2.6                  |
| TrafficAnalysis            | TrafficAnalysis.mdf     | 1719    | 23.76           | 0.7   | 126.06               |

Figure 2 – Database granularity highlighting end-to-end visibility across host and network

Most DBAs are not storage experts; they speak in terms of recovery point objective (RPO), and recovery time objective (RTO) as they are accountable for these metrics down to the second. DBAs often find conventional storage i.e., standard infrastructure based on LUNs, overly complex to manage, which adds additional risk of human error potentially risking business continuity. Standard infrastructure requires constant tuning and becomes obsolete quickly as business needs change. VMstore eliminates storage complexity, helping DBAs to achieve low RPOs and RTOs with database level snapshots with zero stun, non-disruptive clones, and synchronous replication.



Figure 3 – Protect your SQL Server databases with policies at DB level

## Getting Started

VMstore is the only storage platform that supports concurrent hypervisors. You can run multi-hypervisor workloads on the same system, at the same time. This is very useful if you have mixed workloads or plan to migrate to Microsoft Hyper-V without the need to add storage. VMstore supports Microsoft HA implementations such as SQL Server AlwaysOn Availability Group (AAG) and Exchange Database Availability Group (DAG). Plus, VMstore SQL Integrated Storage works with both virtual and bare metal SQL Server environments.

Experience Different! For more information on how Tintri VMstore can turbo-charge your SQL Server databases and business success through a simple, Intelligent Infrastructure, visit [tintri.com/vmstore](http://tintri.com/vmstore). Or better yet, contact your Tintri representative or infrastructure partner and request a demo of VMstore for SQL Server.