

HOW TO TALK TO DATABASE ADMINISTRATORS



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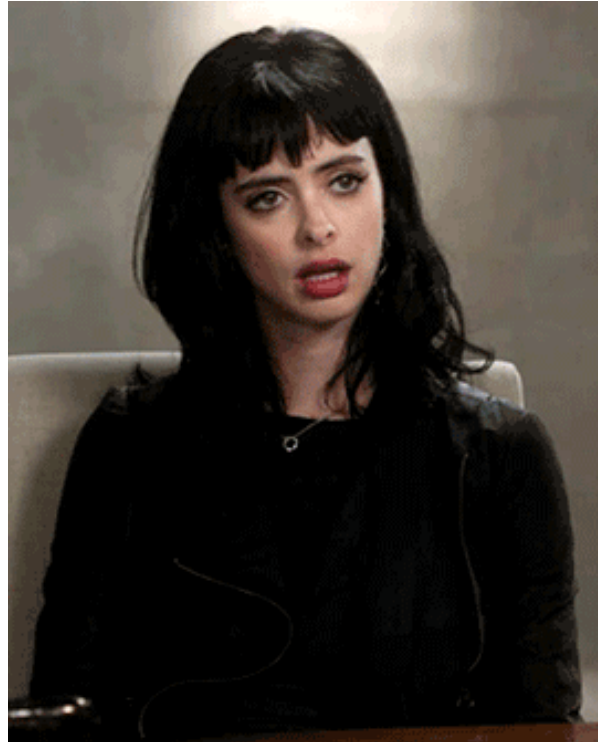
<http://marshapiercedba.com>



DOES YOUR DBA COMPLAIN ABOUT PERFORMANCE?



HAVE YOU EVER TOLD YOUR DBA THAT EVERYTHING IS FINE BECAUSE THERE ARE MILLIONS OF IOPS AVAILABLE?



STORAGE IS THE BIGGEST INFRASTRUCTURE BOTTLENECK FOR MOST DATABASES

YOUR DBA SHOULD NOW THEIR LATENCY

DBA's Actually Have The Ability To Monitor Storage Performance From SQL Server using

```
sys.dm_io_virtual_file_stats ( { database_id | NULL }, { file_id | NULL } )
```

This is an aggregate since the last reboot so it needs to be logged

```
SELECT DISTINCT UPPER(LEFT(mf.physical_name, 1)) AS Directory,  
( io_stall_write_ms / ( 1.0 + num_of_writes ) ) as result,  
io_stall_write_ms, num_of_writes,  
fs.database_id,  
fs.[file_id]  
FROM sys.dm_io_virtual_file_stats(NULL, NULL) AS fs  
INNER JOIN sys.master_files AS mf ON fs.database_id = mf.database_id  
AND fs.[file_id] = mf.[file_id]
```

<https://marshapiercedba.com/what-is-my-latency-anyway-pt-1/>

HOW DBA'S OPTIMIZE STORAGE

DBA'S DO NOT THINK OF THESE AS STORAGE RELATED BUT THEY ARE

Using Multiple Volumes

Separating Non-Clustered Indexes

Partitioning Data

Leveraging File Groups

Segregating Data By IO Profile

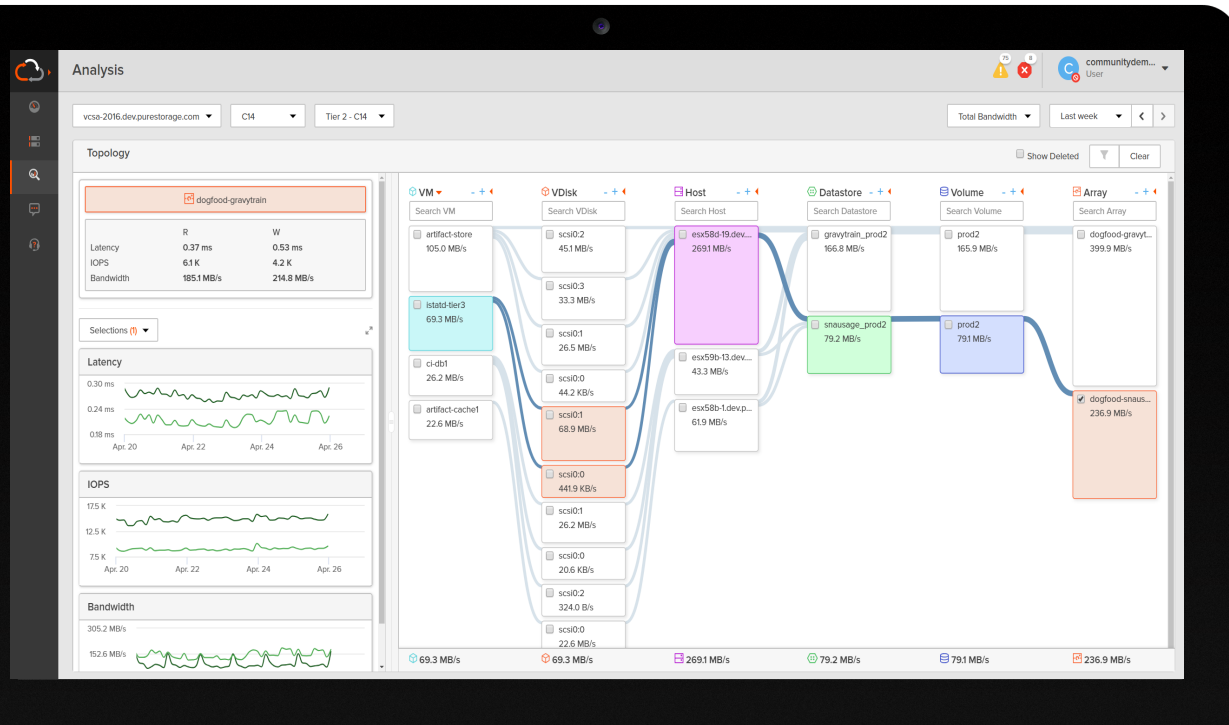
- Data
- Log
- Temp
- Backup

DATABASES NEED TO BE CONSISTENTLY FAST

WHAT ABOUT VIRTUALIZED DATABASES?

PER VMWARE'S BEST PRACTICES FOR SQL SERVER

Storage configuration is critical to any successful database deployment, especially in virtual environments where you might consolidate multiple SQL Server VMs on a single ESXi host. Your storage subsystem must provide sufficient I/O throughput as well as storage capacity to accommodate the cumulative needs of all VMs running on your ESXi hosts.



NEW

VM ANALYTICS

FULL STACK PERFORMANCE METRICS*

- QUICKLY IDENTIFY TOP VMS WITH LATENCY ISSUES
- FIND THE PROBLEMATIC VM QUICKLY CORRELATED WITH A VOLUME
- GET COMPLETE VISIBILITY OF LATENCY, BANDWIDTH, AND IOPS

OPTIMIZING YOUR VMWARE FOR SQL

WE ELEMIMATE LUN TETRIS



USE MULTIPLE PVSCSI ADAPTERS

ONE VOLUME PER VMDK

SEPARATE VOLUMES FOR DATA, LOG, TEMP
AND BACKUP

CHECK YOUR HBA

DQLEN	WQLEN	ACTV	QUED	%USD	LOAD
32	-	32	29	100	1.91

MOST HBA ADAPTERS DEFAULT TO 32 MOST DATABASE NEED 64 UPWARDS OF 256

STORAGE CONSUMPTION CAN GO WRONG

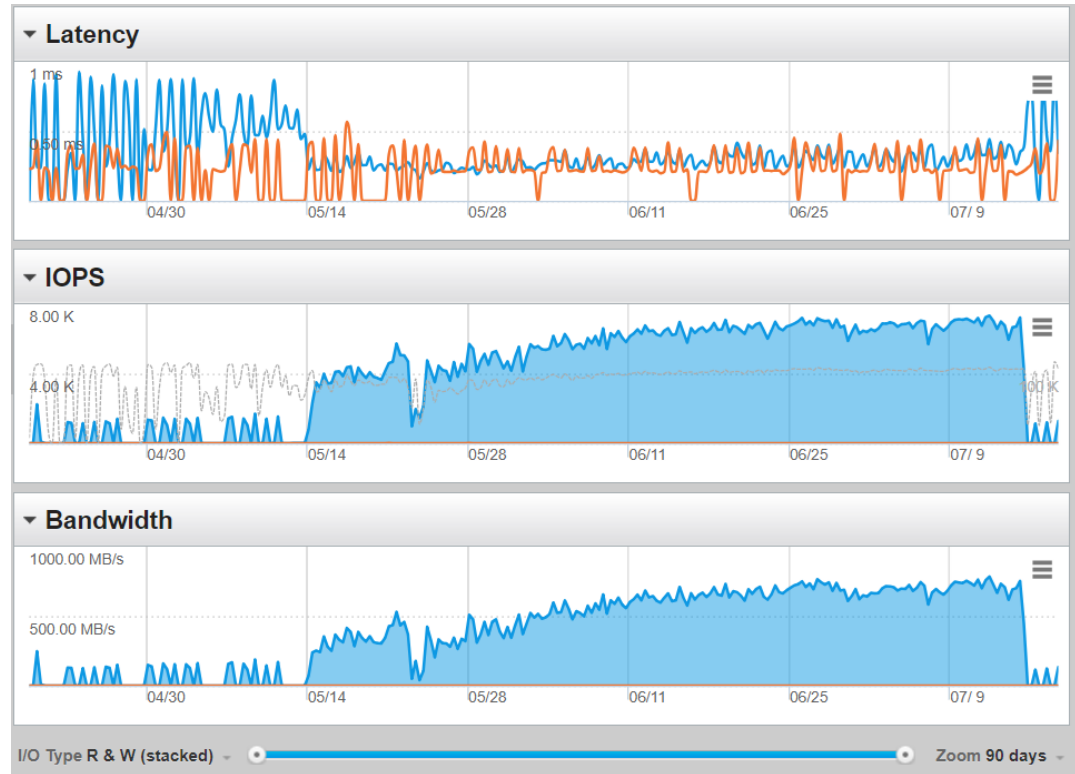
DBs can be extremely high I/O consumers!

(Usually bad code)

(This one was...)

(So...)

(Let's blame the developers like we always do...)



DO YOU HAVE EXPONENTIAL DATA GROWTH?

IS YOUR DBA CONSUMING ALL YOUR SPACE?



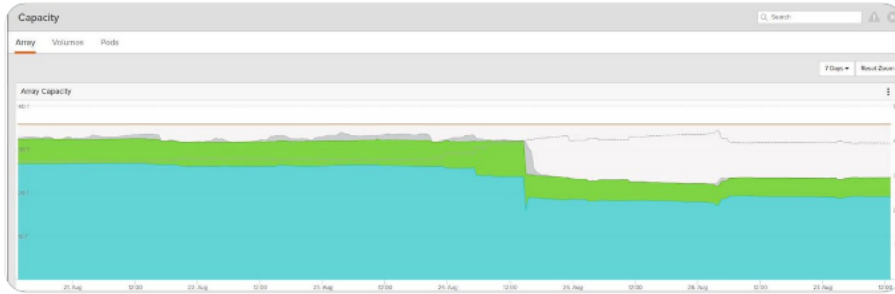
WVOLS



Cody Hosterman @codyhosterman · Apr 4

Replying to @vPedroArrow @jbmassae

One of my favorite screenshots, one customer got 30% of their array back by moving to WVols



8

21



Also a game changer for:

- snapshots
- cloning
- portability

LET YOUR DBA KNOW WHAT STORAGE CAN DO FOR THEM!

Leverage Snapshots For Your Databases

- It can significantly reduce compute, networking and storage, overhead
- Our snapshots consume very little space
- Clones are free.
- Restores Are Expensive for your Company
- Your DBA's Have So Many Copies of Your Data
 - AlwaysOn Availability Groups
 - Database Mirroring
 - SQL Server Replication
 - Reporting
 - Datawarehouse
 - Dev, Test

DATA REDUCTION



Alex McMullan @siliconcto · Apr 16

Another quiet #DevOps Sunday for a savvy database customer. PSTG delivering unmatched efficiency: 1.4PB from 115TB, no snaps/TP counted here



- Inline and (deep) background de-duplication and compression,
- De-duplication down to 512 bytes block level, 64 bytes thereafter.

HOW QUICKLY CAN YOU RESTORE?

**I DON'T ALWAYS TEST MY
CODE**



**BUT WHEN I DO I DO IT IN
PRODUCTION**

memegenerator.net

**Downtime is
expensive!**

You could be loosing tens of thousands of dollars a minute waiting on a restore.

**HA Solutions do not protect you
against data disasters!**

#PUREACCELERATE



MEAN TIME TO RESTORE!

- Leverage Point in Time snapshots
 - Databases are becoming larger and larger
 - Large Multi Terabyte databases can take hours to restore.
 - What is your SLA for recovery in the event of an outage.
 - Protect yourself from Data Disasters
- Snapshots Can Be Used For More Than Recovery!
 - Use Snapshots to refresh your reporting systems and data lakes.
 - Reseed replication with Snapshots
 - Initialize Replica's in AG's with VSS snapshots
 - Use them to create templates for on premise cloud solutions
 - Key for Agile Development and Continuous Integration.
 - Quickly Test Bug fixes against actual data set.
- Fast Backup w/ Flashblade. Backup Multi TB DB in Minutes

WHAT I SAY WHEN SOMEONE TELLS ME TO OFFSITE MY BACKUPS AND REMOVE THEM LOCALLY



OUR FLASHBLADE IS AWESOME!

How Long does it take to restore your Multi-Terabyte Database?

You can use your regular old SQL server backup scripts

Ola Hallengren, SQL Safe, SQL LightSpeed these all work as well

Do things the way you always have done them!

You just need to change your backup location

You can backup your Multi-Terabyte Database in minutes

It restores just as Fast!

The background of the slide is a vibrant orange color with dynamic, flowing liquid splashes that create a sense of movement and energy. The splashes are most prominent at the top and bottom edges, framing the central text.

ASK ME ANYTHING
Q&A

THANK YOU!

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www.PureStorage.com

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