

Storage in Microsoft Azure

Wat moet ik daarmee?

Bert Wolters

@bertwolters

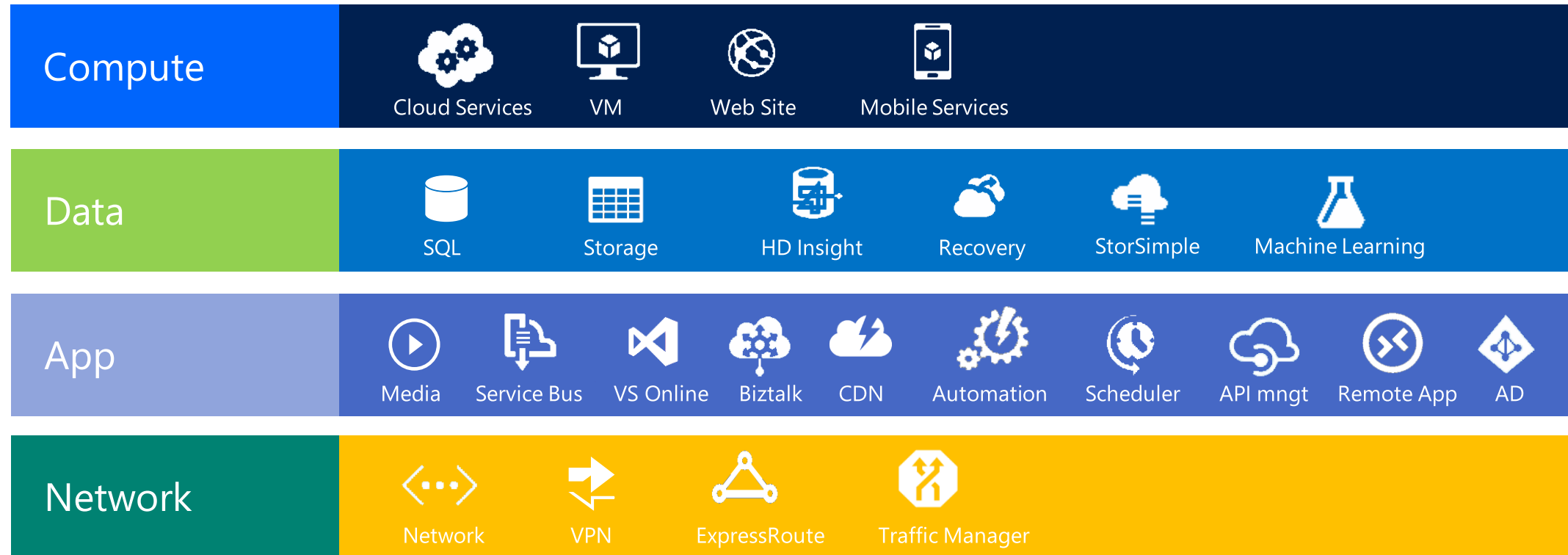


www.azureman.com



Welk deel van het platform
hebben we nu behandeld?

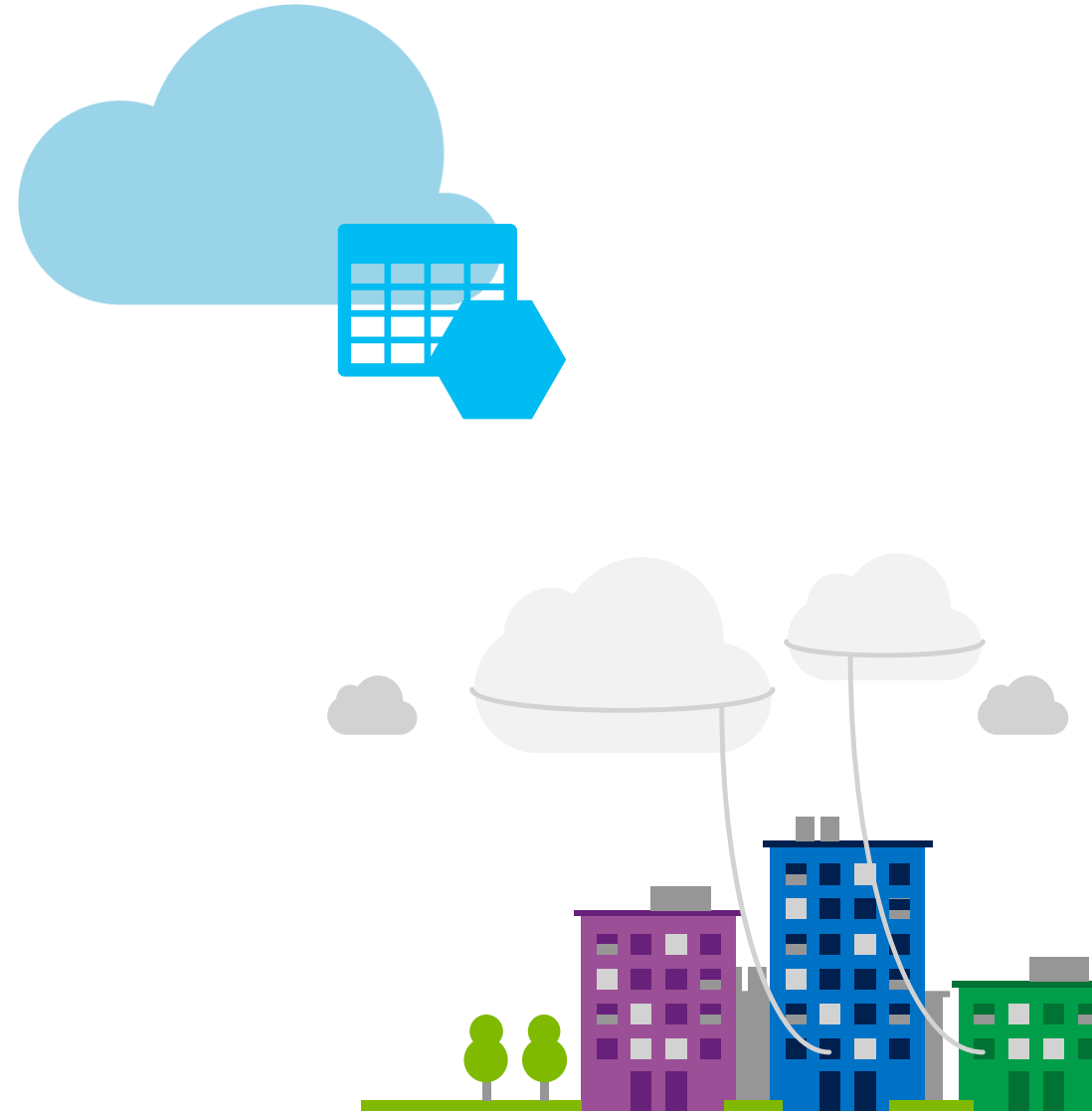
Azure Services



Agenda

2015
Global Azure
BOOTCAMP

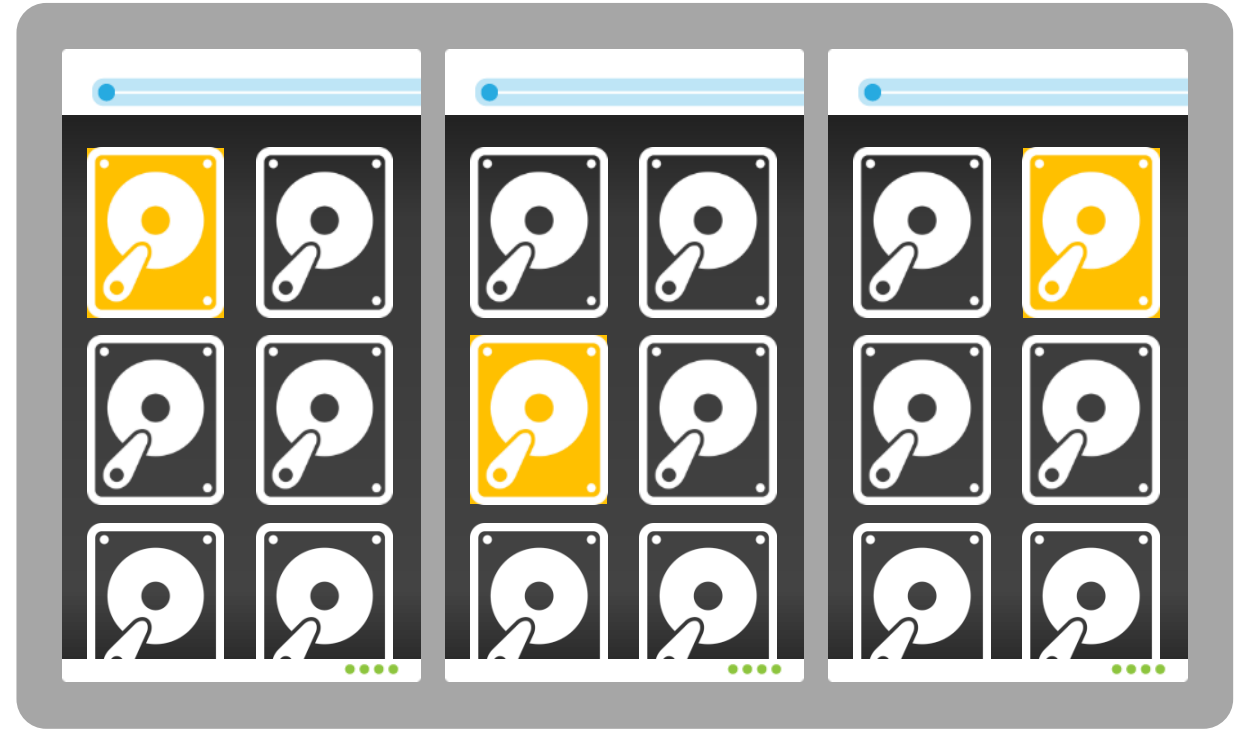
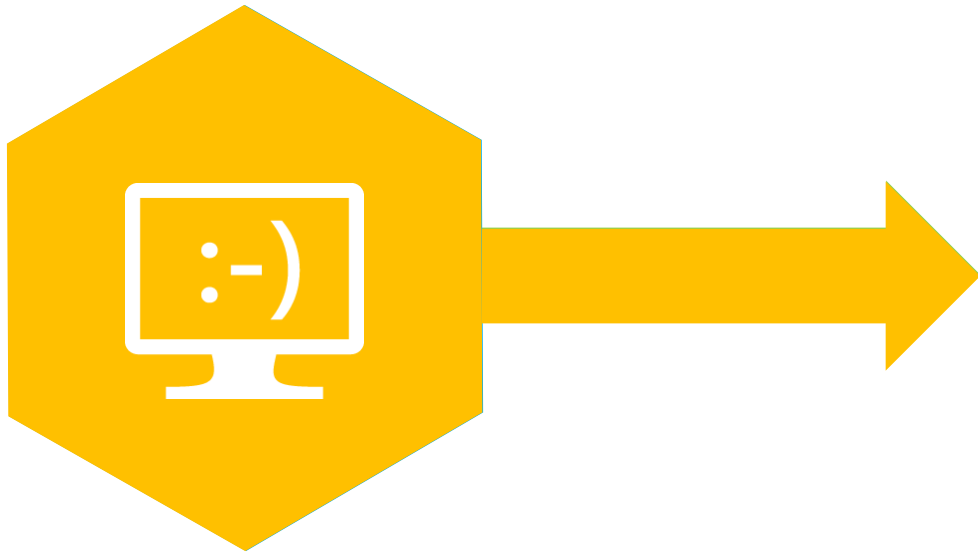
- Recap: Storage Account
- Nieuw! Premium Storage
- Nieuw! Native backup voor Azure VM's
- Azure als target voor backups
- StorSimple HCS platform
- ASAP+ offers
- Samenvatting



Recap: Storage Account

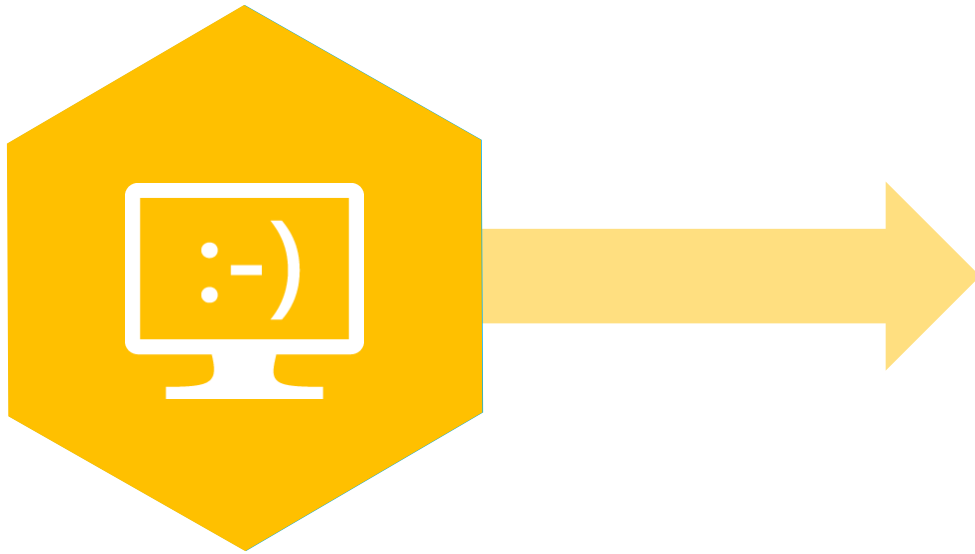
- Container voor opslag van vhds, websitecontent, SQLdb's, data, etc
- Standaard 20 accounts bij een Azure abonnement
 - Deze limiet is te verhogen door middel van "valide, zakelijke redenen" tot 100 accounts.
- Storage account kan maximaal 500TB aan data bevatten
- Is beveiligd door middel van een Storage Account naam en 2 security keys.
 - Toegang via naam en 1 security key

Azure Storage Service: a public cloud service



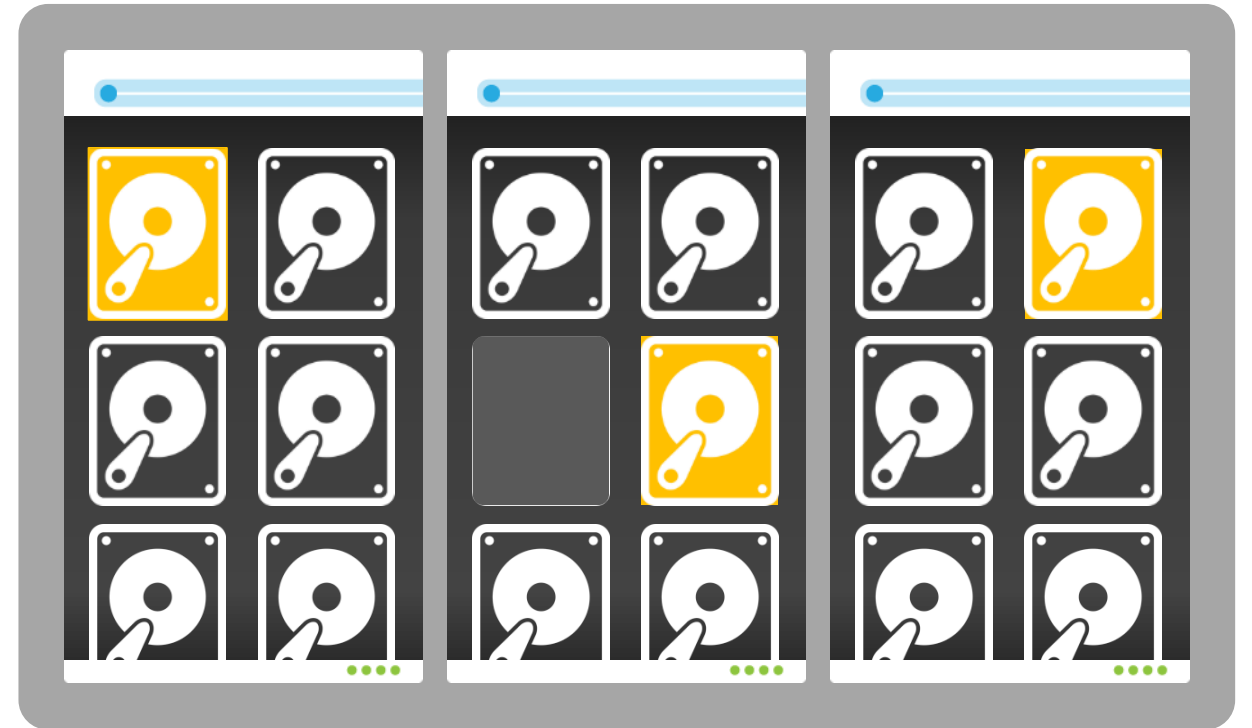
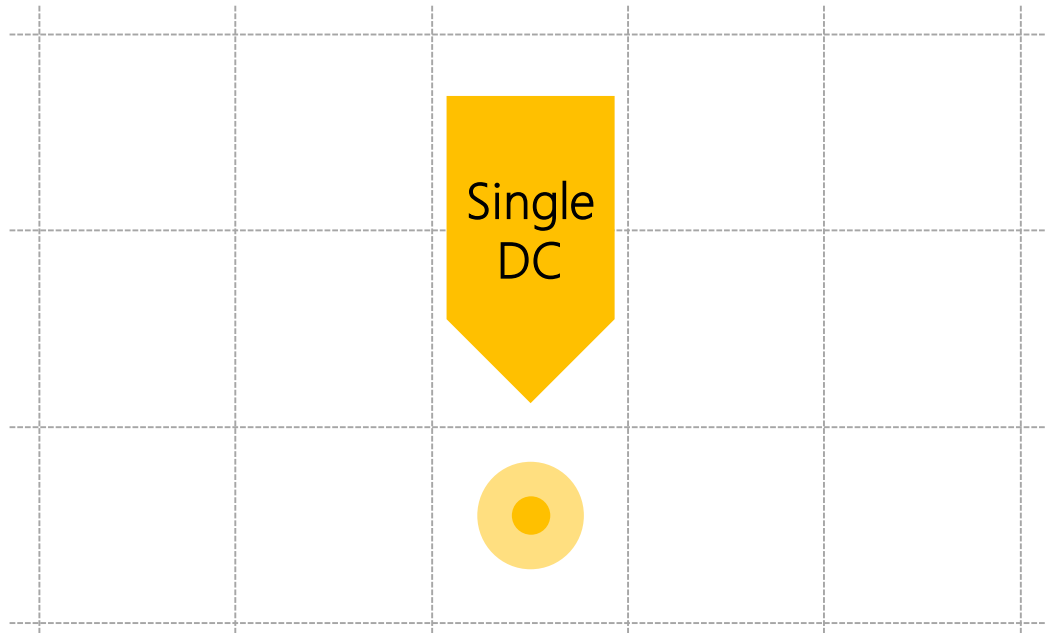
Microsoft Azure Storage

Azure Storage Service: a public cloud service



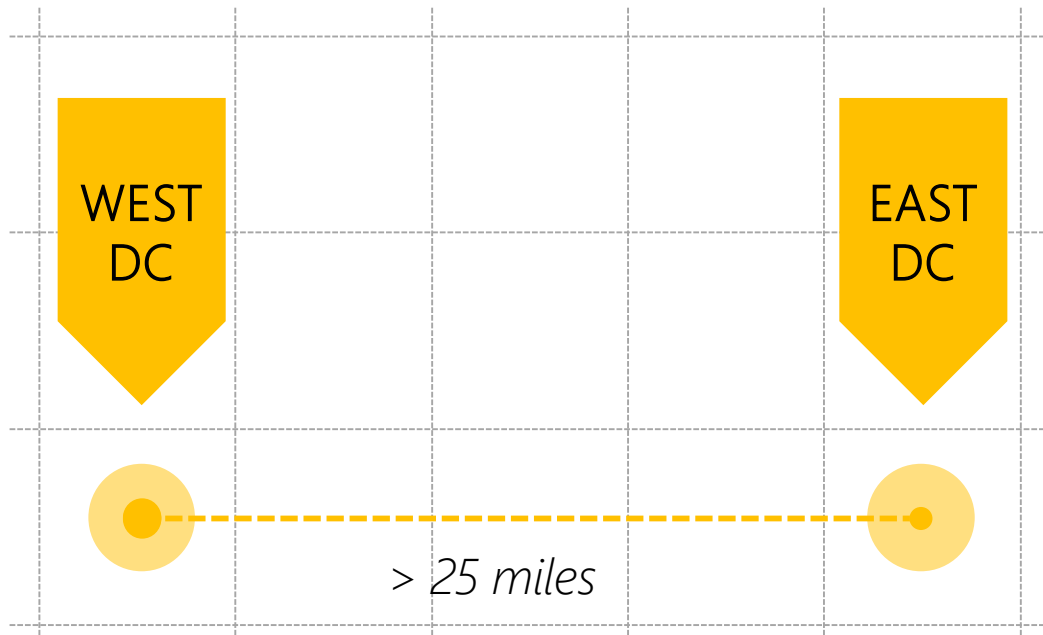
Microsoft Azure Storage
Highly Durable Storage

Azure Storage Service: a public cloud service

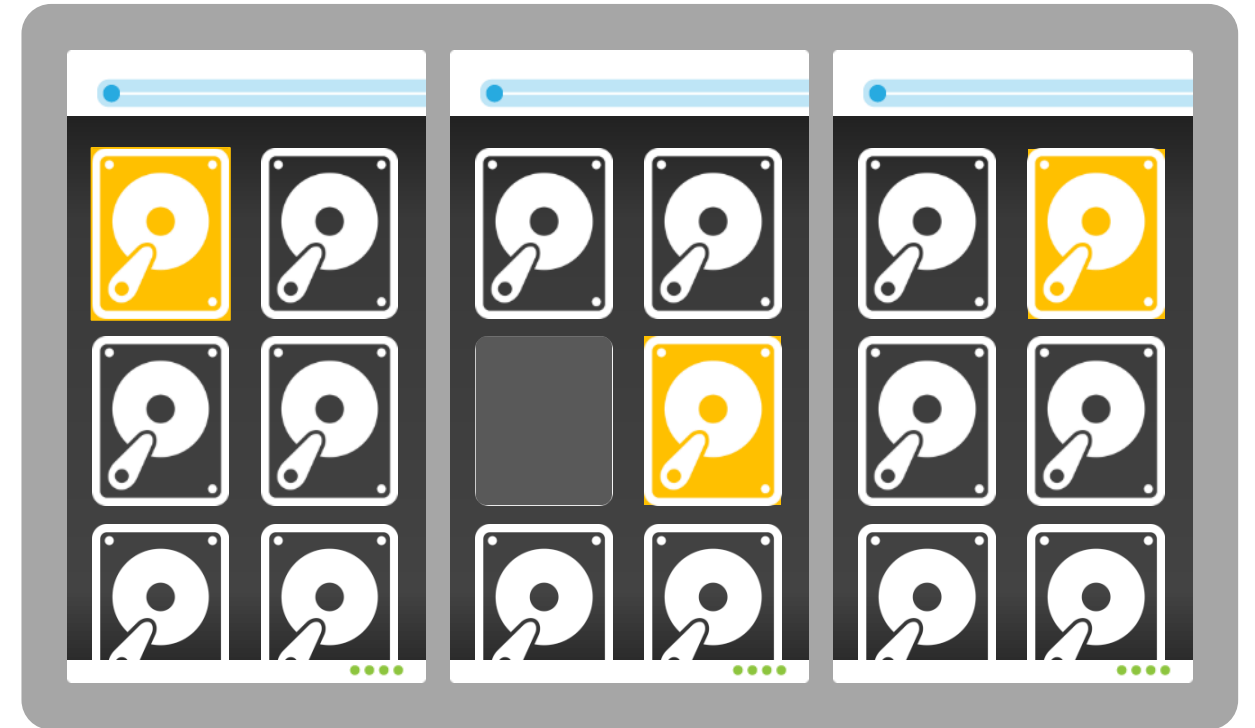


Microsoft Azure Storage
Local Redundant Storage

Azure Storage Service: a public cloud service



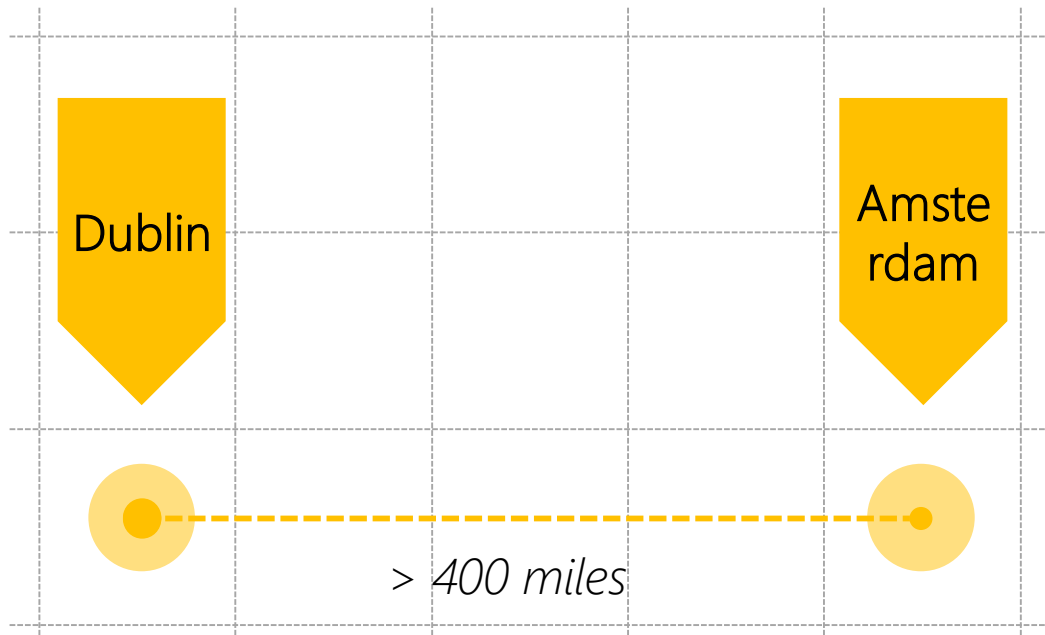
Continuous storage
zone replication



Microsoft Azure Storage

Zone Redundant Storage

Azure Storage Service: a public cloud service



Continuous storage
geo-replication

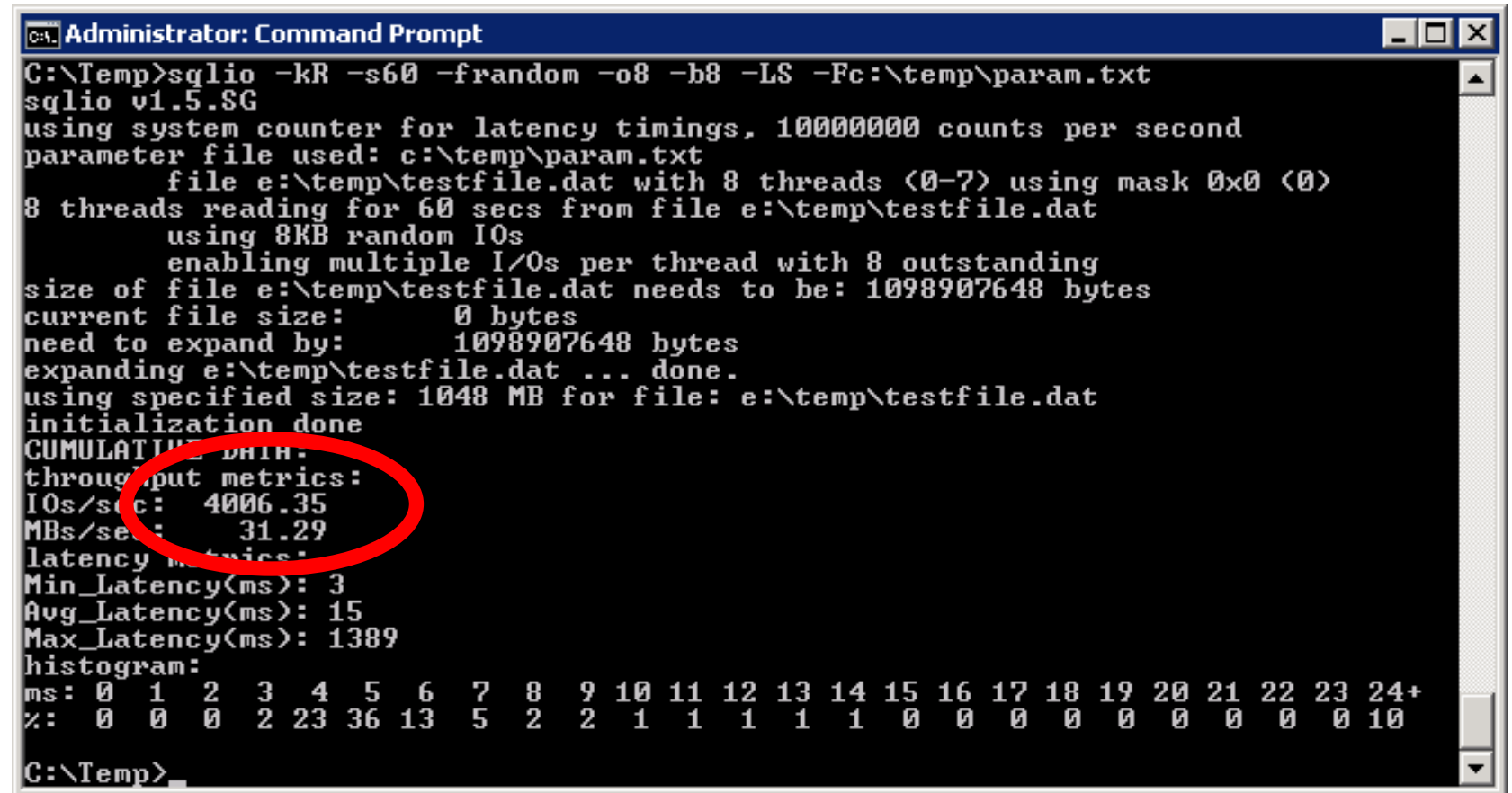


Microsoft Azure Storage

Geo-Redundant Storage

Standard Storage: Gotcha's

- Hoe zit het met de performance?
 - Relatie tussen gekozen type storage en performance van de VM.



```
C:\Temp>sqlio -kR -s60 -frandom -o8 -b8 -LS -Fc:\temp\param.txt
sqlio v1.5.SG
using system counter for latency timings, 10000000 counts per second
parameter file used: c:\temp\param.txt
      file e:\temp\testfile.dat with 8 threads (0-7) using mask 0x0 (0)
8 threads reading for 60 secs from file e:\temp\testfile.dat
      using 8KB random IOs
      enabling multiple I/Os per thread with 8 outstanding
size of file e:\temp\testfile.dat needs to be: 1098907648 bytes
current file size:          0 bytes
need to expand by:         1098907648 bytes
expanding e:\temp\testfile.dat ... done.
using specified size: 1048 MB for file: e:\temp\testfile.dat
initialization done
CUMULATIVE DATA:
throughput metrics:
IOs/sec: 4006.35
MBs/sec: 31.29
latency metrics:
Min_Latency(ms): 3
Avg_Latency(ms): 15
Max_Latency(ms): 1389
histogram:
ms: 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24+
%:  0  0  0  2 23 36 13  5  2  2  1  1  1  1  1  0  0  0  0  0  0  0  0 10
```

Standard Storage: Gotcha's

- Hoe zit het met de performance?
 - Relatie tussen gekozen storage en performance VM.
- Snelste "standaard VM" via
 - <https://gallery.technet.microsoft.com/Automate-the-creation-of-e41aecf6>

Nieuw! Premium Storage

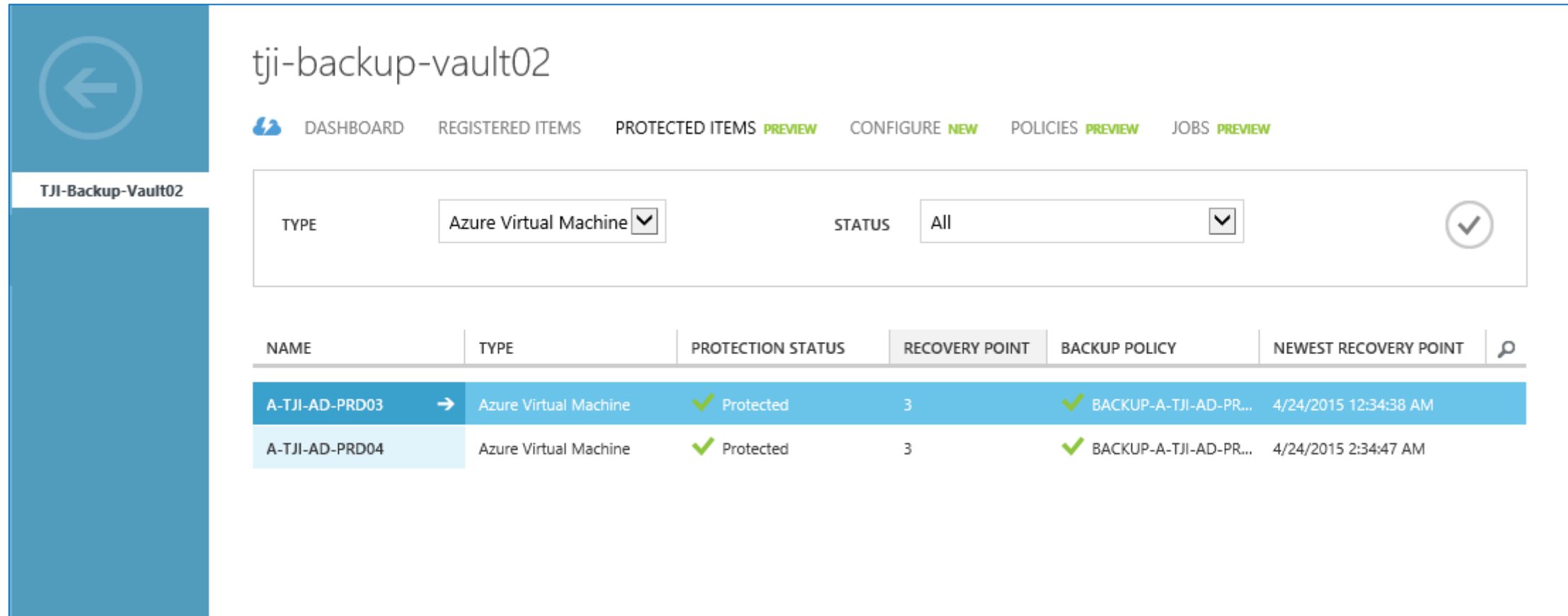
- Nu alleen nog beschikbaar voor blobs tbv opslag van vhd's
- Hiermee kunnen we maximaal 32TB aan storage aan een Azure VM koppelen.

Verschillen

	"Standaard" Storage	Premium Storage
Types VM	A, D, G	DS, G
Maximale capaciteit in een VM	16TB	32TB
Types Storage	LR, ZR, GR, LRO	LR
Beschikbaarheid (22-04-2015)	Globaal	West US East US2 West Europe East China SouthEast Asia West Japan
Maximale Performance (theorie)	500 I/OPs / disk	5 IOPs / disk
Prijs voor 1TB (LRS vs. LRS) per maand	€ 17,90	€ 111,-

Nieuw! Native Backup

- Ontwikkeld na veel vraag vanuit de (oude) markt



tji-backup-vault02

DASHBOARD REGISTERED ITEMS PROTECTED ITEMS PREVIEW CONFIGURE NEW POLICIES PREVIEW JOBS PREVIEW

TYPE Azure Virtual Machine STATUS All

NAME	TYPE	PROTECTION STATUS	RECOVERY POINT	BACKUP POLICY	NEWEST RECOVERY POINT
A-TJI-AD-PRD03	Azure Virtual Machine	Protected	3	BACKUP-A-TJI-AD-PR...	4/24/2015 12:34:38 AM
A-TJI-AD-PRD04	Azure Virtual Machine	Protected	3	BACKUP-A-TJI-AD-PR...	4/24/2015 2:34:47 AM

Azure als target voor backups

- Backup via DPM
- Backup via Azure Backup voor Clients en Servers
- Backup door third parties, zoals:
 - Veeam
 - Synology
 - Cloudbacko

Wat staat er op de roadmap?

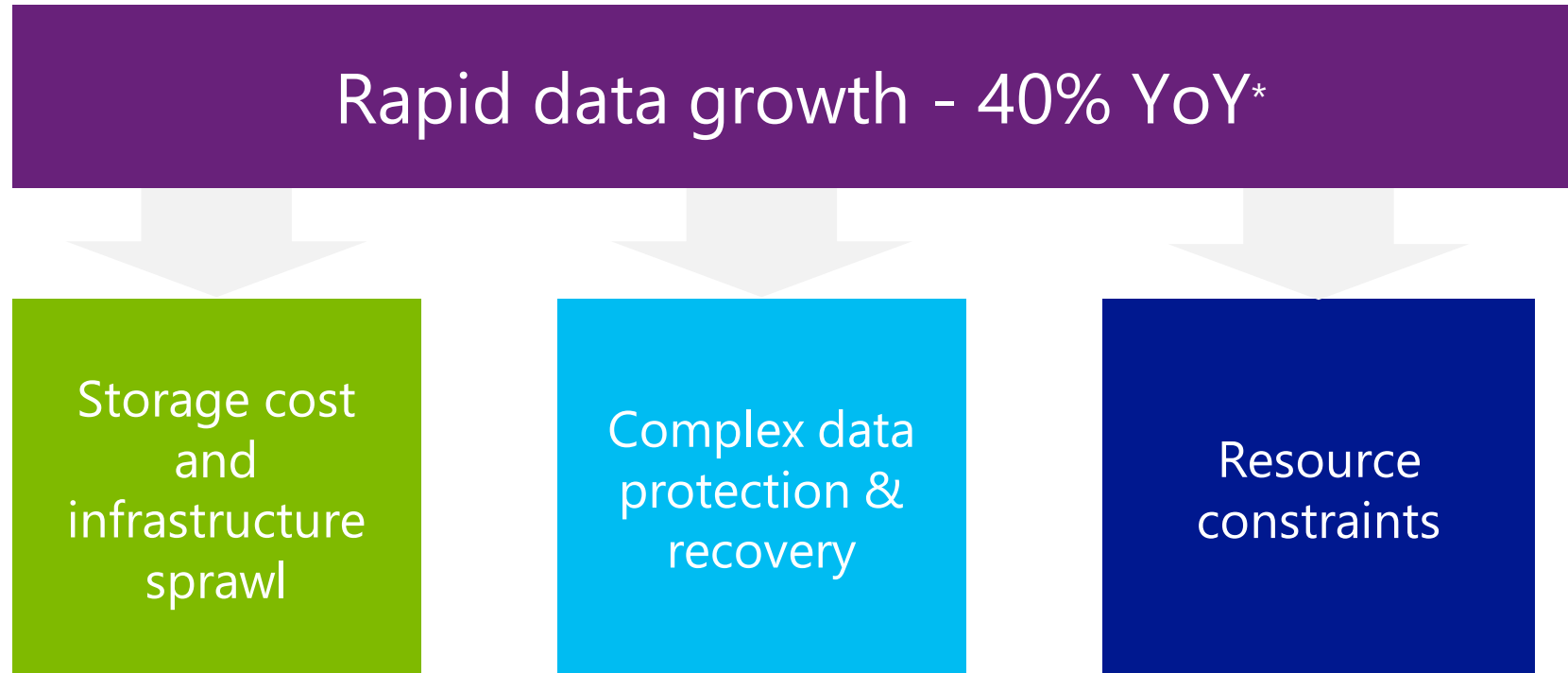
- Client Side Encryption for Azure Storage objects
 - Roadmap? Wat is dat en waar kan ik die vinden?
 - <http://www.microsoft.com/en-us/server-cloud/roadmap/>
- Wat wil jij op de roadmap hebben?
 - <http://feedback.azure.com>



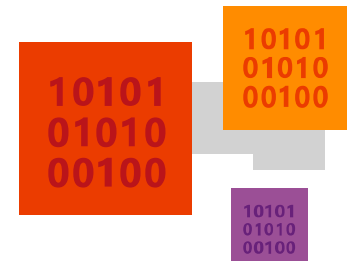
Hybrid Cloud Storage Microsoft Azure StorSimple



Storage challenges



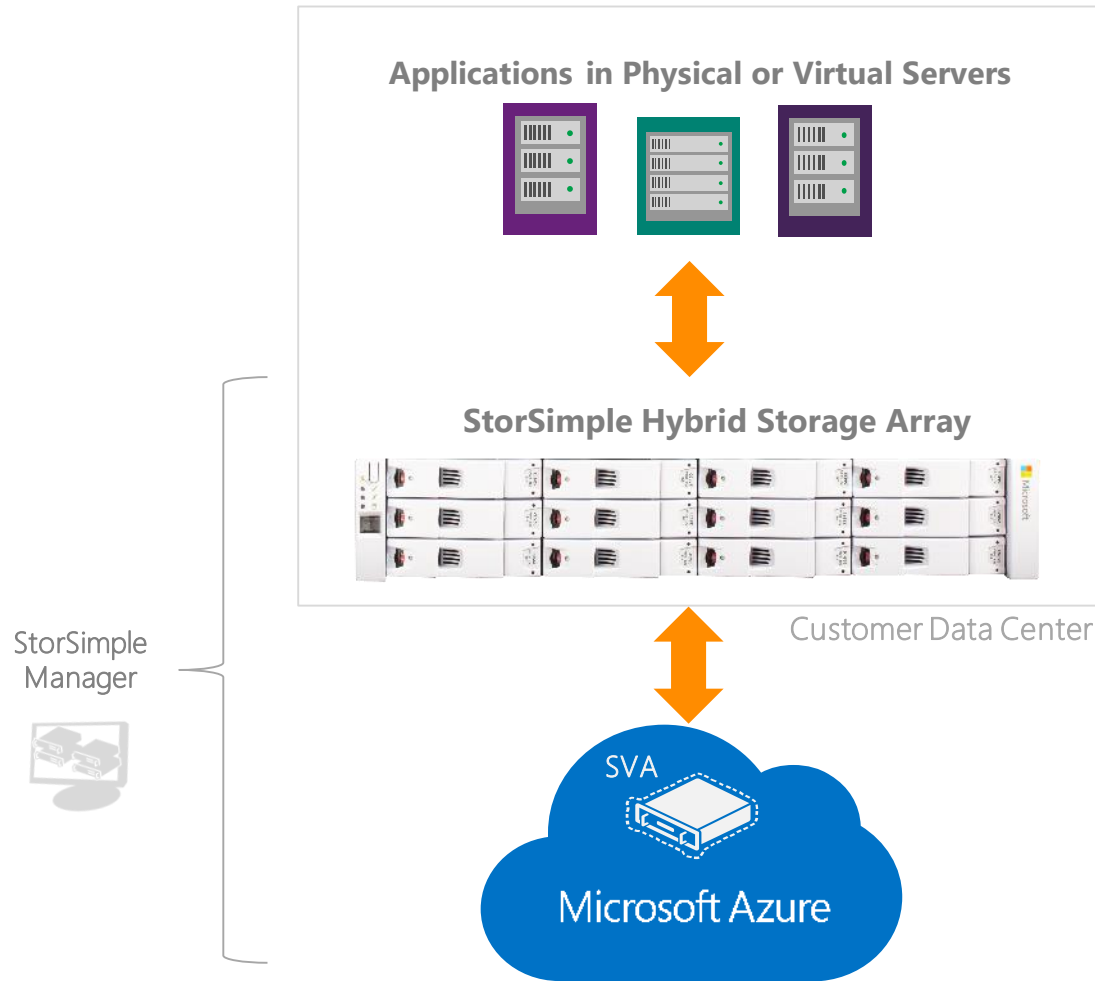
Storage Today = Complex & Expensive



Microsoft has a unique solution

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StorSimple connects Windows, Linux and VMware servers to Azure Storage in minutes with no application modification



Enterprise SAN storage

Inline de-dupe,
compression &
automatic tiering

Automated offsite data
protection using cloud
snapshots

Highly efficient,
location independent
disaster recovery

Access in Azure to
enterprise data with
StorSimple Virtual
Appliance

Consolidated storage
and data management

How customers benefit

Storage Today

Primary Storage



Archival Storage



Disk-based Backup



Remote Replication



Tape backup and DR



Microsoft Azure StorSimple



StorSimple



Microsoft Azure

Manage
data growth

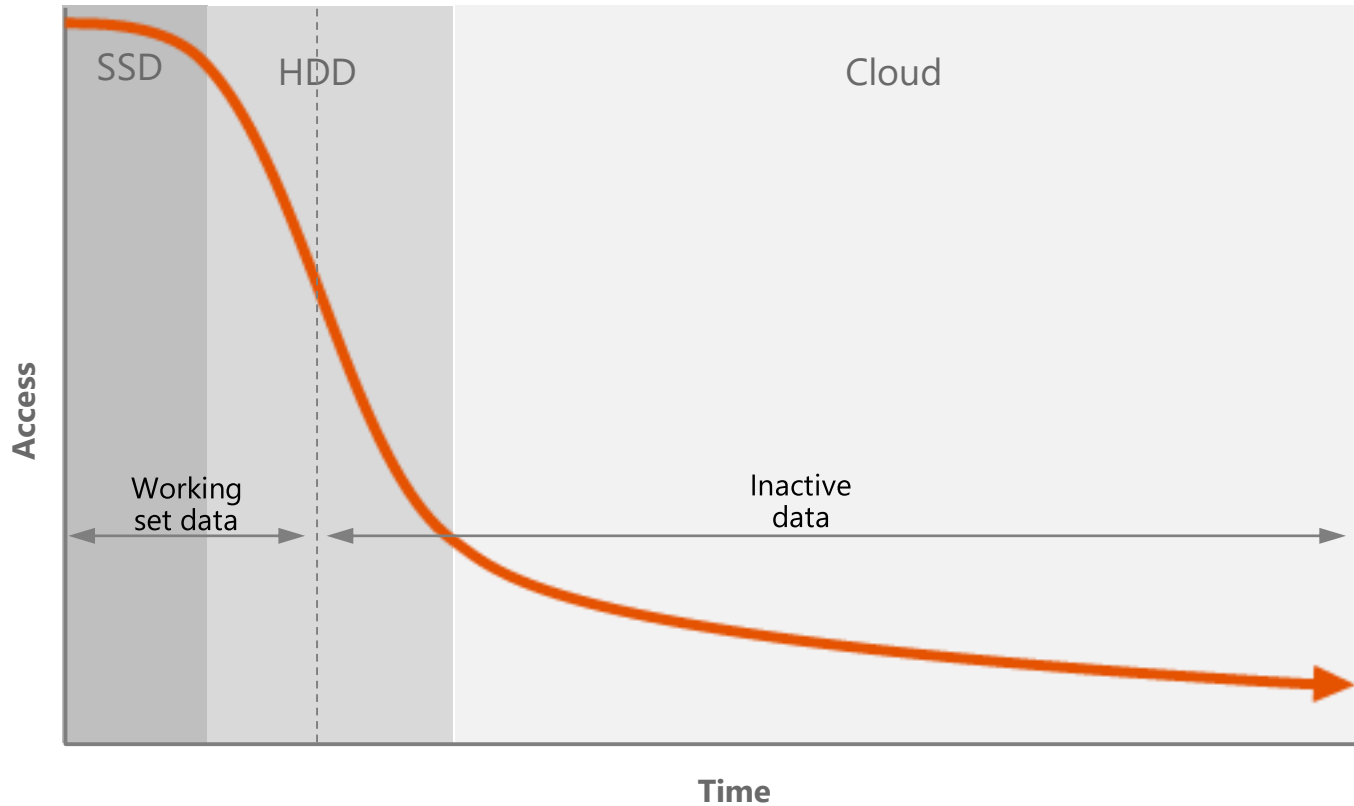
Lower storage
costs

Simplify data
protection and
disaster recovery

Increase business
agility

Reduce storage costs by 40-60%

How customers benefit



Unstructured data
growing 40% YoY

Working data set
stays fairly
constant

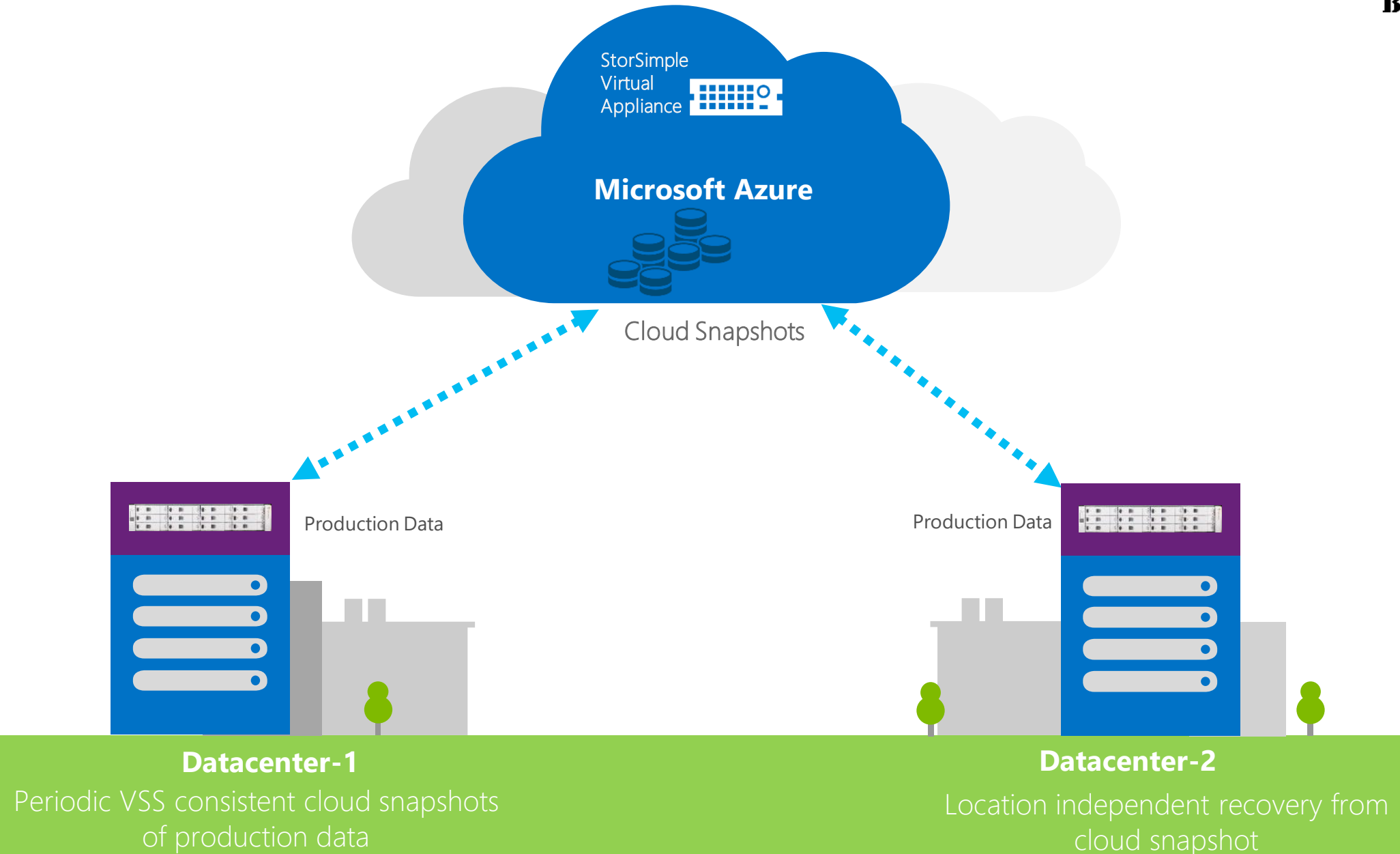
Hybrid storage
array performance
for working set

Inactive data is
tiered to the cloud

StorSimple provides enterprise storage with cloud economics

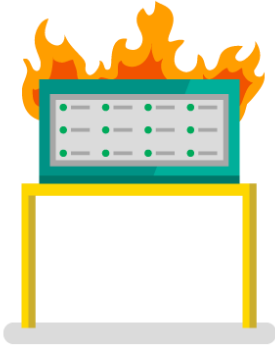
Simplify offsite data protection

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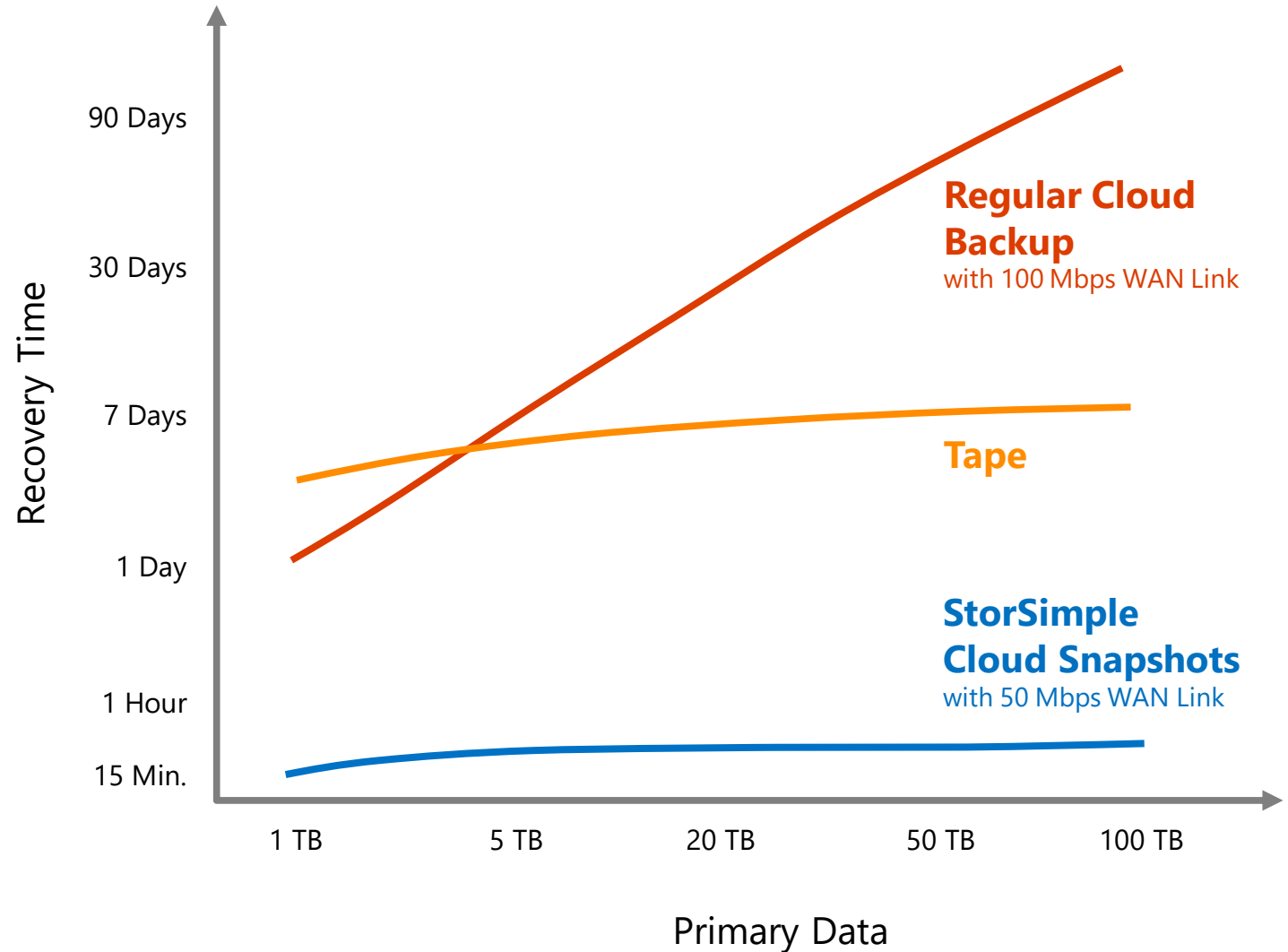
Enable efficient disaster recovery

Storage Recovery Times from Offsite Backups in a Disaster



Storage availability after DR is independent of volume sizes

Rapid recovery enables DR testing and validation



Increase IT agility to meet business priorities

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On-demand storage

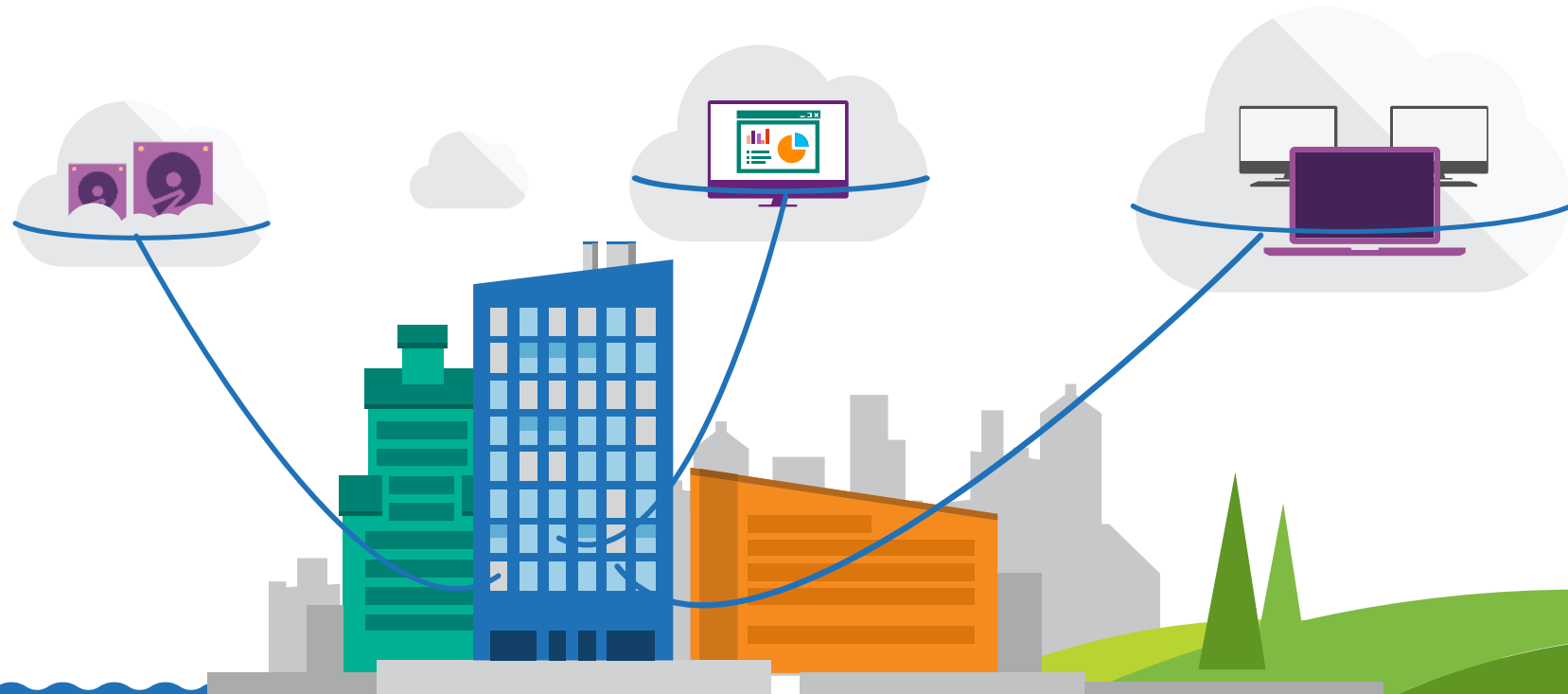
No need for incessant planning and worrying about running out of capacity for primary storage and compliance data

Consolidated management

No need to manage separate data protection solutions or be on-site. Up to the minute status and consistent control in all sites

On demand infrastructure

No need to setup or maintain on-premises equipment for new or special projects, since enterprise data can be accessed in the cloud



ASAP+ offers

Offers valid till June 30, 2015

	7000 series	8000 series	
	ASAP+ 50 ¹	ASAP+ 60 ¹	ASAP+ 100 ¹
What customers pay for	\$50K/year on Azure EA for Azure storage <ul style="list-style-type: none"> Covers ~80TB of Azure storage capacity through StorSimple SKU: 6QK-00001 	\$60K/year on Azure EA for managed storage² <ul style="list-style-type: none"> Covers ~60TB of managed storage capacity³ through StorSimple SKU: 6QK-00001 	\$100K/year on Azure EA for managed storage² <ul style="list-style-type: none"> Covers ~100TB of managed storage capacity³ through StorSimple SKU: 6QK-00001
What customers get at <u>NO</u> additional cost	7020 appliance (worth \$70K)³ <ul style="list-style-type: none"> Gold support for 1 year with Next Business Day (NBD) parts Shipping charges Optional deployment services⁴ 	8100 storage array (worth \$100K)³ <ul style="list-style-type: none"> Gold support for 1 year with NBD parts Shipping charges Optional deployment services^{4,5} 	8600 storage array (worth \$170K)³ <ul style="list-style-type: none"> Gold support for 1 year with NBD parts Shipping charges Optional deployment services^{4,5}
Additional costs	<ul style="list-style-type: none"> \$5,000 per year for Gold support in years 2 & 3 Additional \$2,500 per year for upgrade to platinum support Import duties and taxes 	<ul style="list-style-type: none"> \$6,000 per year for Gold support in years 2 & 3 Additional \$2,500 per year for upgrade to platinum support Import duties and taxes 	<ul style="list-style-type: none"> \$7,500 per year for Gold support in years 2 & 3 Additional \$2,500 per year for upgrade to platinum support Import duties and taxes

Note: All offers include geo-replicated storage (GRS) for a wide range of use cases; platinum hardware support upgrade option subject to availability on a per country basis

¹ Azure commitment SKUs that customers can use to consume StorSimple storage services and all Azure services. The actual StorSimple managed storage available may vary by discount, use case and use of Azure services

² Managed storage typically includes capacity for primary storage, cloud snapshots and copies of cloud snapshots in Microsoft Azure; metering and billing done based on actual storage consumption in Microsoft Azure

³ 7000 series appliances and 8000 series storage arrays built and distributed by Seagate

⁴ Qualifies for deployment via a qualified partner; \$4,000 per appliance for new installation and \$1,000 per appliance for additional installation at the same site. One offer per qualifying enrollment per customer; offer cannot be broken up or combined with other Azure deployment offers

⁵ Qualifies for StorSimple consumption offer via a qualified partner; \$4,000 per 8000 series storage array for attainment of 5TB of Azure storage consumption post de-duplication and compression; Offer must be availed within 4 months of StorSimple storage array shipment

Economics – Traditional vs Hybrid Cloud Storage

Illustrative cost comparison for 60TB of primary data

Function	Traditional Storage Products	Traditional Storage Cost	Cost with Microsoft Azure StorSimple ¹
Primary and Archival Storage	Storage Array with Associated Software	\$90,000	\$0 ²
Backup and Disaster Recovery	Backup Media Server and Software	\$30,000	\$0 ²
	Disk Backup with Deduplication Licenses	\$120,000	
	Offsite Tape Storage	\$30,000	
Capital Cost for the Customer		<u>\$270,000</u>	<u>\$0</u>
Support Cost		\$130,000	\$19,500
Cloud Storage Cost		\$0	\$180,000
3-Year Customer Cost		<u>\$400,000</u>	<u>\$199,500</u>
<div>40–60% Savings</div> Additional Customer Benefits		None	<ul style="list-style-type: none"> • Tape eliminated • Tested, location independent DR • Cloud used as secondary DC • Power/space/cooling savings • IT time/productivity savings

¹ Based on ASAP+ \$60k offer with StorSimple 8100 array and platinum support over 3 years (EA Level-A pricing); based on 1.5x de-dupe and compression with data backup and disaster recovery

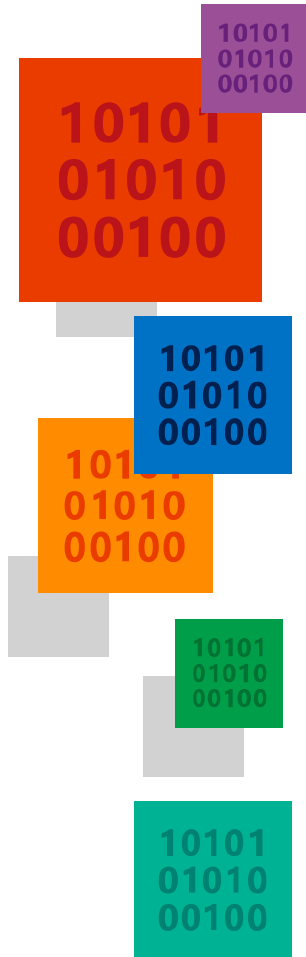
² 8100 storage array list price \$100,000; includes de-dupe and compression, data protection and disaster recovery software, and unlimited licenses for StorSimple Virtual Appliance

³ 8100 storage array built and distributed by Seagate

Hybrid Cloud Storage provides major benefits

- ① 40-60% lower TCO versus traditional enterprise storage
- ② Primary storage with automated data protection and highly efficient disaster recovery
- ③ Pivot from infrastructure management to innovation

Learn more: microsoft.com/storsimple



Appendix

StorSimple 8000 series – What's new

Two new, higher performing storage arrays¹

- Faster network connectivity (10G)
- Expanded workloads



StorSimple 8100

StorSimple 8600

Two new integrated Azure-based functionality

- Azure VM access to enterprise data
- Consolidated management through Azure



**Microsoft Azure
StorSimple Virtual Appliance**

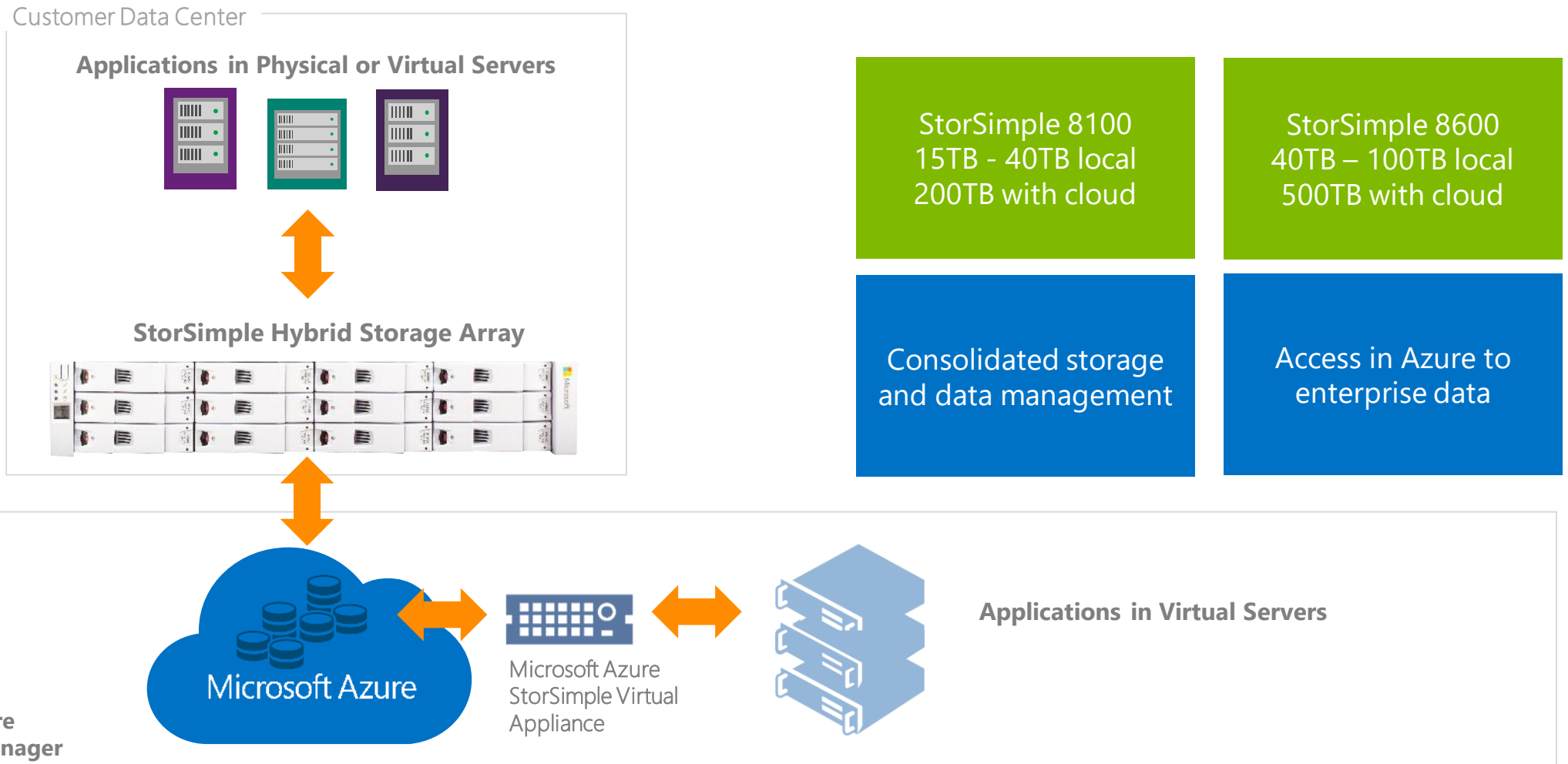


**Microsoft Azure
StorSimple Manager**

¹ 8000 series storage arrays are built and distributed by Seagate

StorSimple 8000 series: Where they fit in

StorSimple 8100, StorSimple 8600 with Microsoft Azure StorSimple Manager and Microsoft Azure StorSimple Virtual Appliance



¹ 8000 series storage arrays are built and distributed by Seagate