


Dell Technologies® World 2022 Investigation

	May 2022

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DELL TECHNOLOGIES® WORLD 2022 INVESTIGATION

QUESTIONS

主要有几个大的问题：

1. 拥抱多云是MKT策略，还是务实的商业策略
2. 目前Dell®在中端做了很多事情，是不是真的聚焦发力中端了
3. 从powerstore,powermax,powerflex产品复用能力看，是不是在做平台化，后面还有什么动作？
4. objectscale在软化上云与vcf+objectscale+tanzu这两条线上，主打那些场景，如何把objectscale卖好

ANSWERS

Summary

1. Dell Technologies® World 2022 was held in Las Vegas on May 2-5, there are over 8000 attendees (impressive number post pandemic, a lot of enthusiasm)
2. Important announcements:
 - a. Dell®'s multi-cloud strategy: from multi-cloud-by-default to multi-cloud-by-design
 - b. Strength Dell® APEX cloud services: as-a-service, in response to customers asks and HPE® Greenlake etc.
 - c. Partnership with Snowflake®: use on-premises data stored on Dell object storage with Snowflake® Data Cloud
 - d. Dell® PowerProtect Cyber Recovery with Amazon® AWS and Microsoft® Azure
 - e. Over 500+ software advancements free of charge to PowerStore, PowerMax, and PowerFlex, including CloudIQ cyberattack protection, container orchestration platforms from ALL vendors, not just Tanzu family focus anymore
3. Important takeaways:
 - a. Dell® operate in three major areas of \$1.3 trillion TAM after VMware® becomes an independent company
 - CSG: Client system business \$48B FY21 Revenue

- ISG: infrastructure solution group \$33B FY21 Revenue
- New business: Edge and Telco (currently 7 million cell towers/base stations worldwide, that could be 7 millions potential data centers or multi access edge compute/network/storage nodes, compare to public cloud all together 600 data centers)

b. Dell®'s multi-cloud strategy is here to stay, Project Alpine is the multi-cloud operating system with efficient data plane and intelligent control plane. The world is chaos, the key **is operating consistency across all domains, ruthless standardization with low cost and high speed**

- c. Intelligent Edge is the big growth area in the next decade
- d. It's own as-a-service APEX is growing, but play nice with hyperscalers
- e. Continue investment in core storage PowerStore, PowerMax, and PowerFlex.
- f. VMWare® is not the center of universe, e.g. containers (beyond tanzu), PowerFlex HCI (beyond vSAN)
- g. Snowflake® announcement could be the beginning of bringing popular cloud-based SAS and analytics software to on-prem with higher performance

4. What's next (see details in interviews with Michael Dell, and Jeff Clarke etc.):

- a. Increasingly data becomes companies fuel, but they are everywhere and chaotic, what makes them go, how do you protect it, how do you analyze it, provide insight and drive their business, that is the opportunity.
- b. Software vs hardware: from old model of hardware-drive-software to software-capability-ahead-hardware, to address challenges of Moore's Law, transistor density etc. Software is leading the way.
- c. A big movement on software side to "x-as-code": data-as-code, infrastructure-as-code
- d. Hardware move from general purpose CPUs to purposely-built-accelerators (SmartNic, DPUs, GPUs) based on workflows, up to quantum computing. On top of that, software-defined/abstraction layer tie all these together, it become more and more important.
- e. IT used to be in the corner of business, now with digital transformation/first, technology becomes enabler to make business more competitive
- f. Data platform or "The Platform" is the next battle ground and the biggest thing:

- Customers don't care about public/private cloud debate, what they really want is the BEST capabilities no matter where they reside, they could be
 - Keep mission critical data on prem
 - Take advantage analytical tools in the public cloud
 - Do test/dev in the cloud
 - Distribute computing in the edge
 - Etc.
- The platform must help customer to do followings
 - Help to solve data-is-everywhere problem, sometime customers don't even know where is the data
 - Multi-cloud-by-design: technology is the enabler, and tie business model and technology together, customers need a "business operating system" and system architecture to quickly get value from data asset, and differentiate what they do
 - Move data quickly and efficiently as needed
 - Move compute engines to where the data resides for distributed computing
 - Orchestration and automation
 - "if we can take these cloud assets and capabilities, combine them in an orchestrated way, to deliver a distributed platform, game over" (Jeff Clarke)

Details

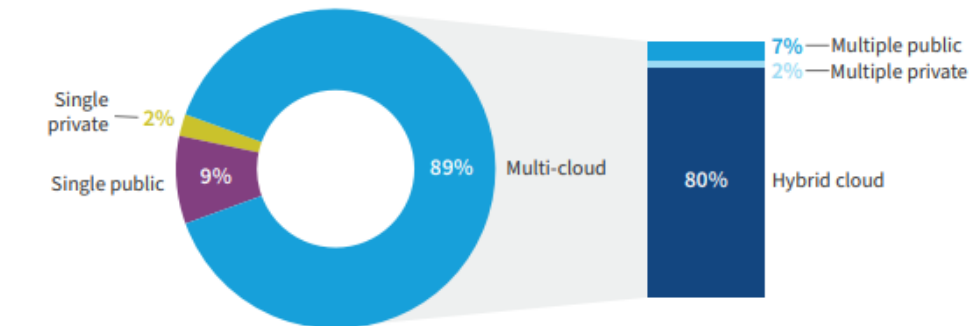
1. 拥抱多云是MKT策略，还是务实的商业策略

Multi cloud here refers to that enterprises have public clouds, on-prem data centers, as well as edge in their IT environment. Multi cloud is for real, according to "The Flexera™ Report - 2022 State Of the Cloud" ^[1], which explored the thinking of 753 respondents from a survey conducted in late 2021, 89% of the enterprises have a multi-cloud strategy.

FIGURE 9

Multi-cloud remains the de facto standard.

Cloud strategy for all organizations



N=753

Source: Flexera 2022 State of the Cloud Report

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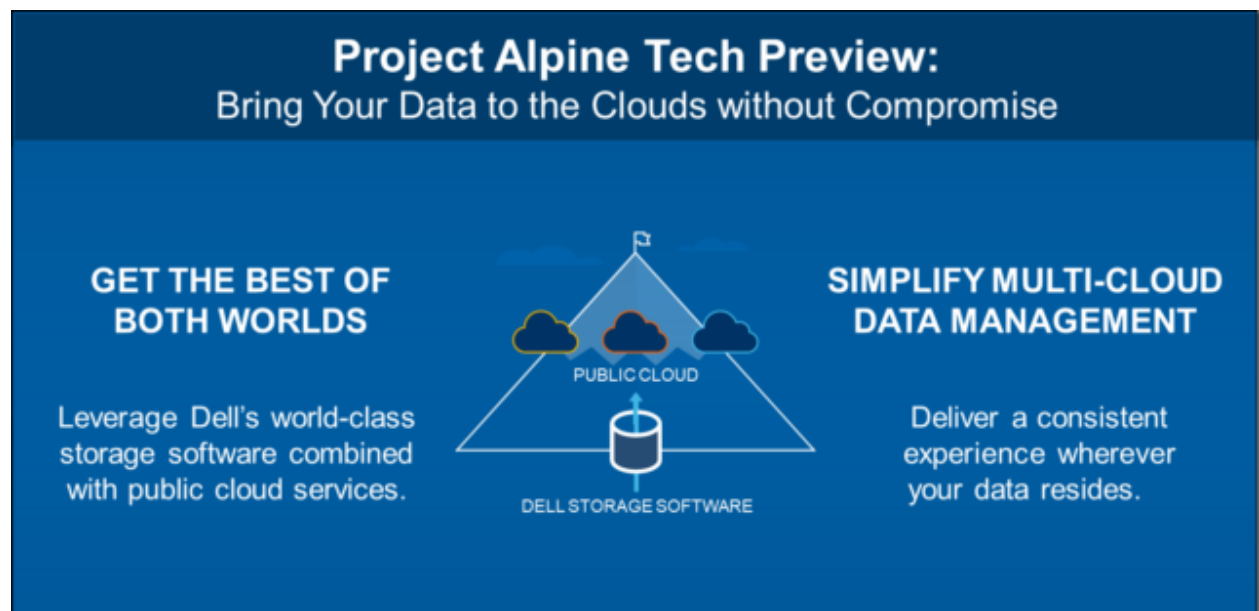
Thus multi-cloud is a reality for most of the enterprises, no matter they are ready or not. Thus, multi-cloud support **is the most important business strategy for Dell Technologies®** moving forward. In matter of fact, the Dell Technologies® World 2022's ^[2] main theme is **"From multi-cloud-by-default to Multi-cloud-by-design"** ^[3], the 'multi-cloud-by-default' refers to the reality of most of enterprise customers are facing, where "multi-cloud-by-design" refers to that the IT products must be designed to better support this customers' need.

According to Dell Technologies®:

- Dell® multi-cloud support is via Dell® Project Alpine^[4] announced in Dell Technologies® World 2022^[5].
- Customers wanted multi- and hybrid cloud, but there are major pain points, vendors should help customers to address these concerns:
 - Data is too hard to manage and move
 - ✓ Data continues to grow
 - ✓ Data becomes more dispersed across on-prem data centers, colo's and public cloud
 - ✓ No consistency between these environment (e.g. different data reduction technologies, no consistent operations like clone, snap etc.)
 - Unpredictable costs
 - Concerns around security, regulation and governance
 - People skill challenges
- Dell® Project Alpine:
 - "Brings our advanced block, file and object storage software capabilities to public clouds such as AWS, Azure and Google Cloud. This week at Dell Technologies® World, we're building on that announcement and showing our rapid progress by previewing

software based on Dell®'s flagship storage platforms—PowerStore, PowerFlex, PowerScale and ObjectScale—running in public clouds.” [6]

- **Bring enterprise data services into the public cloud**
- Several use cases
 - ✓ Cloud native app test/dev: using cloud to quickly dev/test, but deploy the app on-prem for more predictable cost, performance and security (Amazon® EKS w/ Dell block storage software, **build once and deploy anywhere**)
 - ✓ Burst to cloud for AI and BDA services:
 - Project Alpine helped to move data to cloud, seamlessly, efficiently, and with operational consistency
 - Take advantage of app portability/mobility if available (e.g. portability of object-based applications, or MPP distributed compute engine), with the ability to access the same data in both locations, to add cloud capability to an application as needed.
 - ✓ **Eco system: Snowflake** (this could be big, first time **Snowflake support an on-prem vendor**) - connecting Snowflake Data Cloud to data stored on Dell® ECS, enabling customers to perform analytics against their object storage data on-premises or by copying it to public clouds.
 - ✓ **PowerProtect Cyber Recovery for Microsoft® Azure**



<input type="checkbox"/>	Name	Instance ID
<input type="checkbox"/>	jump-host-linux-private-vpc	i-01dd63cbd32d42977
<input type="checkbox"/>	jump-host-windows-private-vpc	i-0ce9f527b360129c5
<input type="checkbox"/>	tme-testcluster-node-3	i-0ae5d7b5d7a99a928
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Project Alpine Tech Preview – Block, File and Object Software in Public Cloud. Shown: Scale-out File Cluster in AWS.

- Other vendors
 - Netapp® probably did this first via data fabric and **AWS FSx for OnTap** etc. (this proves public cloud vendors realized that one-cloud-eat-all is not realistic, it is better cooperated), but it is a pure storage pure play, not like Dell® can provide others (servers/PCs, network, VMware® etc.), as well as stronger storage profiles
 - Pure Storage®: Everything is managed, orchestrated, and protected consistently across clouds. With Pure Cloud Block Store™ [7], Portworx by Pure Storage® [8], and Purity CloudSnap™ [9], you can easily move apps between clouds, use public cloud for backup and disaster recovery, and run DevTest more efficiently.
 - HPE®: HPE® Cloud Volumes, serves the need for enterprise Data Protection, Hybrid and Multi-Cloud Storage Services. These services fully supports your multi-directional edge, on-premises and cloud migration strategies. Experience cloud-like agility, scalability and innovation with security, fast deployment and pay-as-you-go flexibility. HPE® Cloud Volumes Backup is a cloud backup service for your edge, on-premises and cloud workloads. Cloud Volumes Backup enables your data protection strategy with greater simplicity, efficiency, reliability and agility. It delivers a true cloud experience that enables you to backup directly from any storage array, or backup ISV – without the need for a appliance.

HPE® Cloud Volumes Block is a multi and hybrid cloud service for storing and managing your data. This data can be attached dynamically to various cloud compute providers without vendor lock-in and egress costs. Perfect for recovery, hybrid CI/CD, bi-directional migration, hybrid data protection etc.

2. 目前Dell®在中端做了很多事情，是不是真的聚焦发力中端了

Need to clarify a couple points:

1. More accurate word should be “中低端“, because Dell® put a lot of focus on low-end and midrange to not only cover data centers, also on edge and its huge market potential
2. The word “聚焦” should be explained as to invest more in low-end and midrange, but not give up other sectors like high-end market

So the answer is yes:

- Midrange storage is the largest and fastest growing segment in a \$22.4B* storage market, *2021Q1 IDC ESS Tracker, External OEM ^[10].
- High-end Powermax declined, VAST Data® and Infinidat® took shares for high-end, Although Dell®’s mid-range storage and hyperconverged sales are growing at a healthy clip, they haven’t been able to compensate for PowerMax revenues slip sliding away ^[11].
- Dell® midrange product lines and 2022 update (“This simultaneous four-system hardware and software refresh is a testament to the breadth and depth of Dell®’s engineering resources.”^[12]):
 - ✓ PowerStore is a mid-range unified file and block array – the old Unity and VNX line, and combine certain features from XtremIO.
 - Hardware: There is also end-to-end NVMe support and increased networking speeds.
 - Perf: up to 50 per cent better mixed workload application performance, and up to 66 per cent more capacity.
 - Cloud-native with container-based foundation
 - New VMware integrations, including improved vVols latency and performance, and simplified disaster recovery with vVols replication, VM-level snapshots and fast clones.
 - ✓ PowerScale is a scale-out file system array, based on prior Isilon technology.
 - Introduce QLC
 - An upcoming OneFS software release, with tuned operations, provides a major performance

enhancement for streaming read throughput gains of up to 25 per cent or more, depending on workload, on the all-flash PowerScale F-series NVMe systems.

- ✓ PowerFlex is a hyperconverged infrastructure (HCI) appliance system that accompanies the VxRail line but does not use that product's VMware vSAN block storage software.
 - getting NVMe-over-TCP connectivity for lower cost NVMe over Fabrics connectivity using standard Ethernet.
 - PowerFlex has the broadest file and block support for all major Kubernetes and container orchestration platforms from Amazon, Google, Microsoft, Red Hat, SUSE and VMware, compared to other HCI systems.
 - PowerFlex Manager software has new unified compute, storage and system lifecycle management capabilities.

3. 从powerstore,powermax,powerflex产品复用能力看，是不是在做平台化，后面还有什么动作？

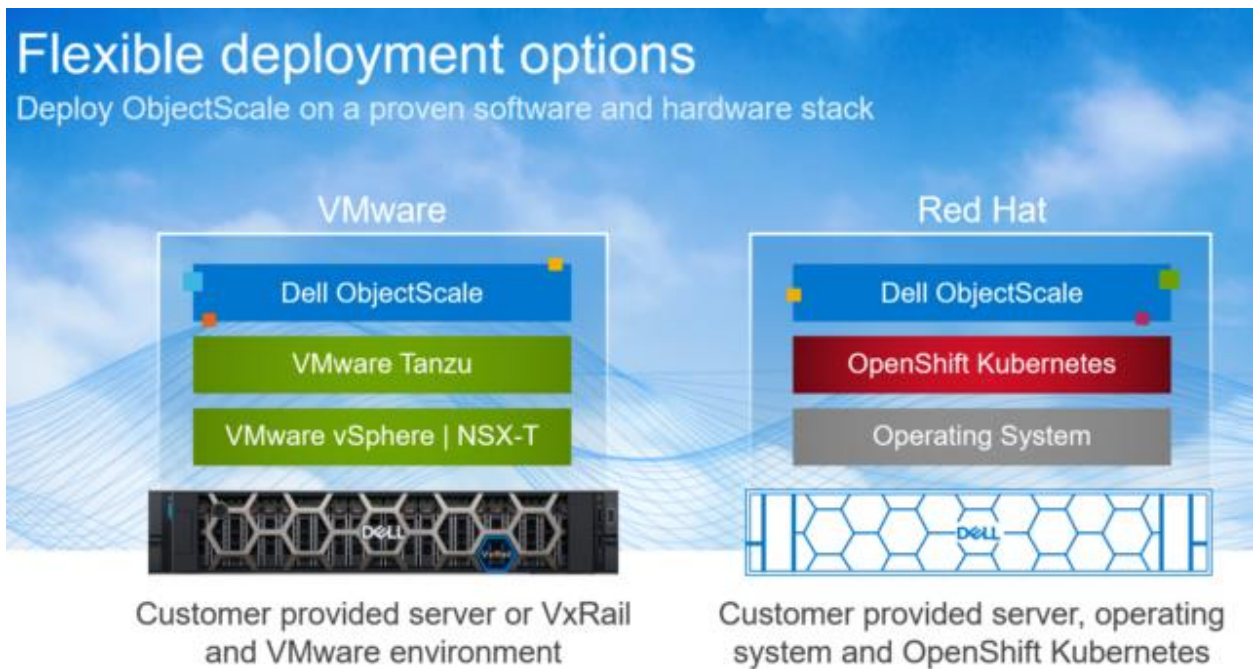
The “platform” here refers to a unified software platform to support all major power series products.

The answer is no, at least for now:

- Hard to tell without internal information related to code base, but from the Project Alpine, at least they are still separate platforms
- Customers like Dell®'s highly-optimized hardware-software bundle, it will be a tremendous engineering effort to get into one code base like ours
- Dell® will probably do more on:
 - Mutli-cloud with data mobility (storage OSs and data protection) and application mobility (e.g. Snowflake and other MPPs)
 - Edge
 - New workflows: streaming, k8s, AI etc.
 - Big vendor advantages: servers, network, PCs, storage and virtualization
- See more details in these interviews with major Dell® executives during **Dell® Tech World 2022**
 - Interviewing Michael Dell ^[13].
 - Interviewing Jeff Clarke ^[14].
 - Interviewing Chuck Whitten, probably next Dell® CEO^[15].

4. objectscale在软化上云与vcf+objectscale+tanzu这两条线上，主打那些场景，如何把objectscale卖好

- A good reference is here ^[16].
- ObjectScale is distributed, microservices-based, multi-node, scale-out, and multi-tenant object storage software with a single global namespace that supports the S3 API.
- ObjectScale currently support both Tanzu and OpenShift Kubernetes deployment ^[17].



- Vcf+objectscale+tanzu route is too restrictive (have heavy dependency on vmware stacks, see below for details).
- ObjectScale object storage software is now generally available as a **free download**, following the software's early access programme ^[18].
- Dell® wanted to find a better replacement for MinIO®, which is widely popular in the big data analytical community, this market potential is huge
- In effect ObjectScale is ECS reimaged, and we might think of ECS as a Cloudian® ^[19], or Scality® competitor and ObjectScale as a more MinIO®-like product ^[20].
- It uses Dell®'s existing ECS (Elastic Cloud Storage) object storage as its code base and is orchestrated via Kubernetes. Dell® positions ECS as a traditional, enterprise-grade object storage system, generally supplied as an integrated turnkey appliance but also available in software-only mode. ObjectScale is also enterprise-grade but software-defined; no appliance here, and cloud-native.
- VMware® Kubernetes fundamentals ^[21]:

Why to Run Kubernetes on VM

- **Orchestrate Containers Alongside VMs**
- **Integrated Infrastructure**
- **Automated Kubernetes Setup**
- **GUI-Based Management**
- **Cloud-Agnostic**
- **Air-Gapping:** VMware® Kubernetes supports air-gapping, which means you can disconnect your clusters entirely from the Internet. That's useful for use cases that require a high degree of security and privacy. Many other Kubernetes platforms require constant Internet connectivity, so they lack air-gapping support.

Drawbacks of VMware® Kubernetes

Of course, VMware® Kubernetes is not the best solution for every use case. Potential drawback to consider include:

- **Ecosystem dependency:** Most of the VMware Kubernetes tooling is developed by VMware, and there's less flexibility in terms of which open source components you can plug into your cluster. If you don't want to be tied into the VMware ecosystem, you may not like VMware Kubernetes.
- **VSphere dependency:** As we've noted, VMware Kubernetes runs on top of vSphere. You can't run VMware Kubernetes on its own. That may be a disadvantage if you want a lightweight Kubernetes stack.
- **Complex tooling:** Compared to other Kubernetes vendors, VMware has a relatively complex set of Kubernetes-related tools. Instead of packaging everything into a single platform, **VMware® has spread its tooling across Cloud Foundation, vSphere, and Tanzu.** That's not a problem if you already know the VMware ecosystem well. But it may be hard to understand which tools do what if you're not very familiar with VMware in general.

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