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"Help me Obi-Wan, InfiniBox is Our Only Hope"

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Biography

Bryan Stover is Director, Americas Pre-Sales Engineering at Infinidat (https://www.infinidat.com).

A seasoned storage engineer with managerial and leadership skills in several organizations, Bryan has spent almost his entire career as a hands-on storage engineer or guiding enterprise engineering efforts as an end user, ultimately ending up selling enterprise storage and mentoring sales teams at multiple storage OEMs before starting his career at Infinidat in 2015.

Bryan blogs at https://www.infinidat.com/en/blog

Keywords Storage infrastructure, API scripting logic, Self-service portals, InfiniBox, Multi–Petabyte scale
Paper type Opinion

Abstract

The storage admin is no longer solely focused on storage, nor do they require PhD levels of storage expertise to do their jobs. Storage systems have evolved; new storage architectures have emerged, which fundamentally changed the storage landscape. It is now the norm for global Fortune 2000 customers to operate at PB scale numbers and the complexities that come with that scale. Systems of this size are not normally known to be agile or intuitive, meaning that storage admin has the time-consuming and laborious manual process of trying to handle storage deployments, reclaim storage or retune storage. But there is another way, explains the author of this article.

Introduction

A long time ago, in an office cubicle far from home, I used to be a Level 3 storage engineer at JP Morgan Chase Bank. Yes, I'm a Star Wars fan. In my days at JP Morgan Chase, we did manage PBs of storage, albeit hundreds of DMX, VMAX, and USP-V frames. In our larger data centres, there were rows and rows and, more, rows of storage frames with at least 4 SAN Fibre channel fabrics, each consisting of three to four thousand ports along with multiple thousands of servers. My point being: managing storage at scale is something that I experienced first-hand for the better part of my career.

Fast forward to 2022, larger organizations, such as JP Morgan Chase, now likely have 100s of PB of capacity; they still probably have larger Fibre channel fabrics


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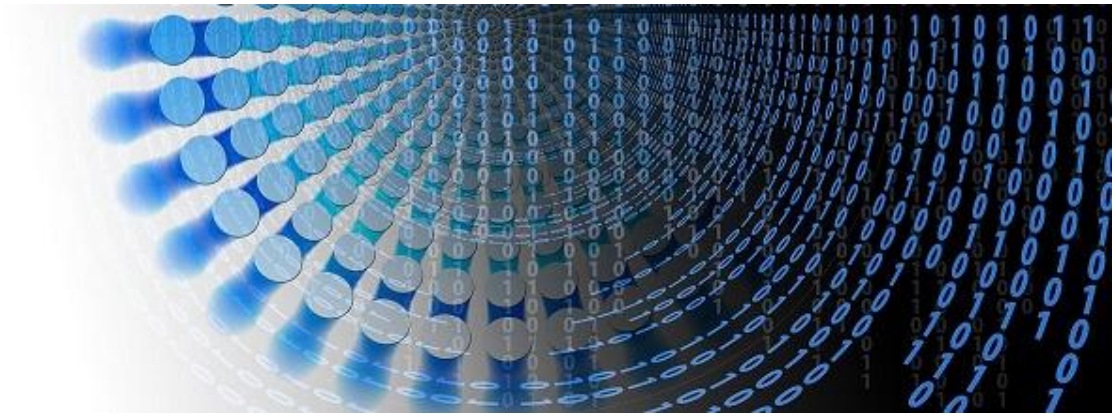
but also are exploring Software-Defined Storage (SDS) on more common networking platforms. The server counts have escalated, too, but I suspect the ratio of virtual servers to container-based apps and bare metal servers have changed dramatically as well.



Managing enterprise storage in 2022 has shifted from selecting media types, creating, and balancing RAID groups, configuring front-end host array ports (specific to each server OS) to now having full-on automation of various deployments at scale with intelligent path management and tighter specific application integration: VMWare, Veeam, and Aptare, to name just a few.

Ease of use

The storage admin is no longer solely focused on storage, nor do they require PhD levels of storage expertise to do their jobs. Storage systems have evolved; new storage architectures have emerged, which fundamentally changed the storage landscape. It is now the norm for global Fortune 2000 customers to operate at PB scale numbers and the complexities that come with that scale. As the Americas Director of Pre-Sales Engineering, I interact with many customers on a routine basis and constantly hear about Infinidat's "ease of use." Our "set-it-and-forget-it" approach is consistently highlighted as one of the key benefits of Infinidat storage. That ease is maintained as we add additional functionality and features to the code.

In my days as a storage admin, many storage platforms were advertised as "easy to manage." Even if you believed that, it was aimed at managing the TB scale. When those traditional enterprise storage frames grew to the multiple hundreds of TBs per system, GUI management with multiple different versions of Java apps and screen refreshes could hardly be construed as "easy." They were slow and error prone, too.

Therefore, large organizations steeped with scripting talent gravitated towards the CLI interface. Using CLI was a benefit, but it was not very intuitive and, quite often, not all tasks available in the GUI were available in CLI. Not to mention the fact that the bulk of the storage administrators were new to scripting and coming largely from

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a server/networking background. This meant most storage deployments, storage reclaim, and storage tuning were manual processes, instrumented via those Java-based GUIs mentioned earlier. These were time-consuming to use, as well as laborious, and often prone to either human or application errors.

New storage architecture

Enter InfiniBox in 2014, a completely new storage architecture designed from inception to be easy in every functional area. Today, it is common for the VM administrator to provision, manage, troubleshoot, and reclaim storage on an InfiniBox via either the GUI, Shell, or direct API calls at multi–Petabyte Scale.

How did Infinidat developers accomplish this task? By throwing away the previous 25 years of bad storage practices and starting from a clean slate with innovative ideas on how things should be done for the future, not the past. Building a doubly abstracted software foundation (no ties to the underlying hardware), addressing the problems of random reads by ensuring the randomness is removed on ingest, and protecting every piece of data written with a read verification process in real time paved the way for fantastic success. All these features and more are driven via a comprehensive API engine.

This doesn't mean a storage admin needs to be able to program or script API; in fact, they never need to see an API call if that is their desire. However, the InfiniBox GUI management interfaces is an HTML5 Restful API interface. There are no Java heap or Java refreshes from the days of old; plus, the interface, workflow and logic are clean with simple user intuitive logic.

For organizations who require some level of scripting for efficiencies at scale, Infinidat provides InfiniShell. InfiniShell is a simple Python wrapper to the same Infinidat API. I just stated earlier the only communication vehicle the InfiniBox understands and responds to is via the management API interface. InfiniShell looks and feels just like a typical Posix command line interface. The InfiniBox commands are also user-intuitive with tab complete functionality to quickly educate a user in how to execute a task.

```
bstover@localhost> pool.query pool=bstover
NAME        STATE    TYPE              PHYSICAL TOTAL    PHYSICAL ALLOCATED        VIRTUAL TOTAL     VIRTUAL ALLOCATED
DATA REDUCTION
bstover     NORMAL   STANDARD               15.00 TB              2.41 TB             15.00 TB              4.75 TB
     1.00 : 1
```

Now what if your organization is massive in scale and reduced in staff due to IT budget constraints, COVID or other challenges? This is unfortunately becoming more predominant across all industries today.

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In conclusion

For these organizations, infrastructure engineers are becoming the norm. Infrastructure engineers are typically versed in more than one technology sector. Storage, Hypervisors, OS and networking disciplines are the common verticals of expertise. Many of these technologies are all advertising standard API as the default management methodology. This means basic API programming/scripting logic has become universal. The required tasks need to be mapped out by an infrastructure engineer: after mapping out a typical set of commands from the API suite to define a new host, create a new pool, create a new series of volumes, establish replication between those volumes to a second frame and finally to map those volumes to a new host; this API runbook is usually provided to an organization's application integration team responsible for the self-service portal.

Enter self-service portals whose basic function is to interact with each of those infrastructure components (storage/networking/Hypervisor/OS) and sequentially execute via API what five distinct groups had to do when I started my career. If that was not simple enough, we give you the commands to call below:

```
https://localhost:443/api/rest/pools?name=bstover

{

"result": [

{
"id": 98791887,
"name": "bstover",
"physical_capacity": 15000000135168,
"virtual_capacity": 15000000135168,
"state": "NORMAL",
"type": "STANDARD",
"allocated_physical_space": 2413103828992,
"free_virtual_space": 10249999810560,
"entities_count": 8
}
],
"error": null,
"metadata": {
"ready": true,
"number_of_objects": 1,
"page_size": 50,
"pages_total": 1,
"page": 1
}
}
```

Infinidat provides our full API guide to our customers with practical examples to help kick-start a storage administrator's journey to becoming an infrastructure engineer. As you can see, I could go on and on about how easy it is to manage and support InfiniBox, and I haven't even mentioned our ecosystem of OEM partner integrations, such as RedHat Ansible or ServiceNow.

If this article has piqued your interest or galvanized your desire to automate your environment, connect with me on LinkedIn. I'd welcome the opportunity to learn about your organization's needs and how Infinidat could assist you along the way.