When Buying the Bundle Makes Sense —
A Look at IBM Spectrum Storage Suite

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Introduction

In the United States and elsewhere, there seem to be two trends at opposite ends of the video content consumption spectrum, but both motivated by a similar goal – *getting a good deal on what one wants to consume.* Consider this example:

- **On one end are the "cord cutters"**, those hoping to cut their monthly telecommunications costs by pulling the plug on cable TV's increasingly expensive packages of cable channels (many of which may never be watched) and relying instead on Internet-based content, whether based on hard Internet connections or mobile devices.
- **On the other end are those trying to "save more by buying more".** These folks are trying to reduce their overall monthly telecommunications costs by buying more from a single vendor, often a package of cable TV channels (and maybe a DVR), a flat-rate home phone line, and a broadband Internet connection (and maybe a wireless router); for this "loyalty", the consumer will received all at price that is less than they would pay for the same individual services.

While the demographics, usage habits, and desires of these two sets probably are different, they both are looking to reduce their monthly outflow and simplify their lives as consumers of content. Interestingly, it turns out that each (in their own way) is trying to assemble the right "bundle" of services to meet their needs, desires and economic objectives, although their objectives and methods do vary.

Telecommunication vendors are responding by saying "if you buy all of your services from us (i.e., a "bundle"), we will give you a good discount from buying the piece parts." Often, the consumer can even save more by providing their own hardware (such as a cable modem or router). By and large, the consumers now are more interested in the content and services than the mechanics of making it happen, which largely has become transparent, except when looking at their monthly bill or when things go wrong. The same thing is happening in many data centers.

Focus on Enterprise Storage

While this metaphor probably applies more broadly, today's focus is on enterprise storage, wherever it might reside (i.e., in the enterprise data center, in the cloud, or maybe somewhere else). Enterprise storage is defined broadly as the media and devices (and services) on which enterprise data resides (i.e., where it is stored). This primarily includes solid-state devices, rotating disks, and magnetic tape, but the possibilities are broader (but beyond the focus of this paper). **In the past, the enterprise data center's goal was to achieve the right quality of service level for the present value of the data being stored, the latter part recognizing that the value of data likely will change as it ages and/or the business needs evolve.** This optimization took many forms but consisted of two common principles:

1. **Different data storage devices delivered different performance, protection and optimization levels** and it was important to put the data on the proper "tier" of storage.

2. **The per terabyte cost of storage (as a budgetary line item) needed to be contained** because the rate of data growth had become unaffordable, especially when extrapolated into the future. These costs included storage hardware, software, administration, and external services.

Traditional approaches to making this happen focused on finding the right or best hardware/software/services at each storage tier and getting a life-cycle cost (TCO) for each terabyte of storage as low as possible for that tier. No doubt, this was an improvement from prior practices and made good sense, as long as you ignored:

- The need (and difficulties) to manage each product individually and
- The costs of transitioning/upgrading, when the time had come to replace storage devices, add more capacity or get new capabilities/features.

In spite of the continuing growth of data to be stored (and the mounting budgetary pressures therefrom), it is the procurement, integration, and management of all of these tiers and piece parts that has become the bigger problem. This has given rise to the age of software-defined storage (SDS) and to IBM's just-announced bundled SDS offering called *IBM Spectrum Storage Suite*[1]. Please read on to understand the reasons that SDS may be the next important wave and why IBM's Spectrum Suite is a very desirable bundle.

The Reasons for the Rise of Software-Defined Storage

As in the consumer telecommunications example at the beginning of this paper, the data center management team tends to know what features and functions they need and want. (This is akin to deciding what "channels" of content you desire.) **The managers' biggest challenge usually is trying to get it all delivered to the enterprise users in the most business-effective and cost-efficient way.** This has forced many changes in operating principles, some of which

are reversals of long-standing IT practices.

- **You don't have to buy your storage hardware and software from the same vendor, unless that is to your liking and advantage.**[2] While the quality and nature of storage hardware still can be very important to the quality and characteristics of your storage delivery solutions, it tends to be much less important than it used to be. **The critical success factors for storage solutions now predominantly are in the storage management software.** There are many reasons for this, but most likely, the best reason is that all of the storage vendors are buying from a highly competitive and very small number of component suppliers. In essence, most storage vendors are buying from the same "catalog" of components. If you can achieve your objectives with off-the-shelf hardware (like storage-rich servers running *Linux*, whether branded or not), then most or all of the "value-add" comes from the storage management software. In addition, if you can bring under the same umbrella the data that you have parked in remote clouds, that would be very advantageous as well.

- **You almost certainly don't want to be an integrator of storage solutions.** You now want to be a buyer and user of a pre-integrated storage solution. Being an integrator means a never-ending battle of making things work together the way that you want (and not necessarily as the manufacturer intended), without losing your minds or going broke. Being an integrator requires a lot of expertise and continual integration testing. It is something better left to others that can spread the cost of doing this across many enterprises. This is even more true today because there are good and affordable integrated storage management solutions that you can procure and use, usually without regard (or with much less awareness) to the brand (or location) of the underlying storage hardware.

- **It's OK to trust a vendor (within reasonable bounds, of course).** In the past, it was a "war of the storage vendors" for each procurement at every tier. Without the war, it was presumed that the vendor would take

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[1] In this paper, this long name sometimes will be shortened to *Spectrum Suite*.

[2] For a discussion on this topic, see *Enterprise Storage - Have It Your Way* in the January 29, 2016, issue of **Clipper Notes** at http://www.clipper.com/research/TCG2016001.pdf.

advantage of you (if not at the outset, certainly over time). Unfortunately, this produced many silos of storage that each needed to be managed individually and almost always by different means. While you could replace one vendor's storage with that from another vendor (to gain a temporary economic advantage or other benefit), the administrative burden of making this happen often was ignored.

- **The IT world has changed, mostly due to open standards and virtualization but also due to the rapidly rising costs of administering the polyglot of storage that has been accumulated.** This has put storage software and ease of administration in the foreground and storage hardware in the background, thus now making it is easier to leave a vendor or a class of its storage for another, if and when there is good reason. This puts great pressure on the vendor to continue to satisfy your requirements, which makes an aligned partnership possible and desirable. Both you and your preferred vendor stand to gain from a good and lasting relationship.

- **You are either enamored with the possibilities of cloud-based storage or you are terrified by it.** Regardless, you know that – to some degree – this is part of where you are or soon will be. While cloud storage is simple and straightforward (and, maybe, even seemingly affordable) on an individual use case basis, when you consider the ramifications enterprise-wide, you see that policy issues and control problems abound. You need to control (manage) this before a thousand small leaks sink your ship, not by forbidding it but by making cloud storage part of your overall storage management solution.

- **It's now more important to manage the storage budget on your terms.** In the past, when each deal was a separate financial transaction, you were managing at the level of that item's budget line. In a world of hardware silos segregated by application/use, this might have been OK. However, in a virtualized world of delivered storage services, it is far better to manage the budget across the storage tiers and the many storage boxes therein. Whether this means buying an SDS license and paying annual maintenance fees or leasing the SDS solution on a monthly basis, you want to do this broadly, if you can, and without it becoming a great accounting

burden.

- **Your enterprise data center's storage requirements most likely aren't unique.** Yes, you have many requirements for what you have to store and how you want to store it, but it likely is very similar to what other enterprise's require. No doubt, the scale and mix at each tier and geographic and cloud issues will be different, as will be other factors. Most enterprises still are using a lot of block storage devices, typically using Fibre Channel connectivity. However, with each passing month, object and file storage continues to grow faster than block storage, due to a greater focus on retaining data longer and the rapid growth of semi-structured and unstructured data and the business-critical analytics being performed on them.
  - You probably need to manage all of these data types.
  - You probably want to compress and/or deduplicate your data everywhere that you can and you probably want to encrypt much of it, as well.
  - You probably want to make some of it go very fast (and may be willing to pay for this to happen) but you also have a boatload of data to store at the lowest possible costs.
  - You probably have been using traditional methods for protection, such as backup to and recovery to local or remote storage, which might be flash, disk, and/or tape, depending on the requirements. This might continue to be the right way to proceed for your structured data but the faster growing semi-structured and unstructured data might be better off being protected by other means.

If these characteristics sound familiar, it is because they tend to be universal among enterprises of all sizes. Within your data center and across your enterprise, when it comes to delivering and managing storage solutions, you probably need most, if not all, of the spectrum of capabilities. **The bottom line is that you have many needs for what you want to provision and deliver, and you need to satisfy all of them.** In a global sense, you need all of the capabilities, but that doesn't mean that you want to do everything to each collection or class of data.

Exhibit 1— The Components of IBM Spectrum Storage Suite V1.0

IBM Spectrum Control Advanced Edition 5.2 – *Storage and data optimization using monitoring, automation and analytics*
- Single console for managing all types of data on all types of storage
- Analytics-driven tiered storage optimization that automatically moves data to the most cost-effective tier
- First to market volume-level, cross-platform automated storage tier optimization

IBM Spectrum Protect Suite 7.1 – *Trusted data protection and recovery*
- Protects virtual, physical, and cloud data with one solution
- Enables comparable services to cloud backup providers
- Reduces backup infrastructure costs by up to 53 percent (based on IBM assessments using Butterfly software) with built-in efficiency features: deduplication, incremental 'forever' backup, policy-based administration, choice of storage

IBM Spectrum Archive Enterprise Edition, Version 1.2 (Linux edition) – *Easy-to-use low cost data archive storage*
- Simplifies use of data stored on tape
- Moves files to and from tape without requiring device-specific software
- Reduces TCO for long-term archive storage up to 90%

IBM Spectrum Virtualize Software for SAN Volume Controller, Version 7.6 including Real-time Compression and Encryption Software – *Industry-leading storage virtualization software*
- Enables common functionality, management, and mobility across heterogeneous storage types
- Improves storage utilization up to 100% and enables storing up to 5 times as much data in the same space
- Improves application availability with virtually zero storage-related downtime

IBM Spectrum Accelerate Version 11.5 – *Premier cloud storage platform*
- Enterprise-grade storage simply deployed
- Simplicity, with deep features including advanced remote mirroring
- Delivered on commodity, optimized system, or public cloud infrastructure

IBM Spectrum Scale Advanced and Standard Editions (Protocols) V4.2 – *High-performance scalable storage software for files, objects, and big data analytics*
- Redefines unified storage to drive utilization and business agility with a single global namespace that scales from departmental to global, multisite needs
- Seamless 4D scaling on capacity, performance, protocols, and location
- Match data value to storage capabilities
- Accelerated flash performance (6x) and lower costs (10x savings)

Source: IBM (specifications and claims)

Taken the resulting new principles together, the need for a robust, all-inclusive storage management solution becomes clearer. It just might be your ticket to simplification, ease-of-administration, and attaining the lowest TCO cost for your many tiers of storage. Once this concept is accepted, the challenge is to find the right (best), sufficiently complete SDS solution that you can afford to procure on your own terms. Read on to see how IBM Spectrum Storage Suite satisfies these requirements.

IBM Spectrum Storage Suite – The Solution

The fundamental concept of a suite is that you want to use many if not all of its component parts. Of course, you could buy each one separately. This is the situation when one considers an office suite like Microsoft Office. If you want

to use the majority of the components (*Word*, *Excel*, and *PowerPoint* being the "big three"), it is easier to buy the suite and probably costs no more than buying the big three separately. Moreover, you get the convenience of a single procurement and single install plus the added benefits of the other components in the suite.

The same is true for IBM's Spectrum Storage Suite, which has six primary components, as shown in Exhibit 1, on the previous page.

As noted in Exhibit 1, this is the *version 1.0* list of what is included. IBM has indicated that they expect to enrich this in later releases, by updating the underlying components and, possibly by adding to the components list. This is exactly what you want, a vendor that plans to grow the solution as capabilities evolve without nickel and diming you at every opportunity.

Of course, you have to choose where and when to use the components, just like you would have to do if you selected and procured them individually and wanted to deploy them on a wide-variety of storage platforms. One benefit of the suite is that you do not have to decide in advance. In fact, IBM encourages you to use these products in non-production ways to test out the many possibilities. IBM calls this a Sandbox; play with it all that you want, just not in production.[3] You only have to pay for data capacities stored in production systems. (More on the charging algorithm to follow shortly.)

Other than the bundling economics (the costs per terabyte for storage capacities being managed by Spectrum Suite), *why might bundling be advantageous?*

- Maybe the most compelling reason is that you don't have to pick and choose and then track and document which features are used where (and possibly how or to what extent), which is an onerous task at its best, especially because the data being stored and its uses are dynamic (i.e., they are growing, changing, and moving, etc.).
- Licensing is capacity based and you have the right to use all of the features anywhere that you deem appropriate. All you need to do is keep track of the sum of the capacities under management, including primary versions and backed up versions in the *Spectrum Protect* primary storage pool[4]. IBM has tools to help

you determine this, but IBM works primarily on the honor system and relies on you to have licensed capacity sufficient to cover what you are using.

- The benefits of capacity-based pricing are many, but a very important one is that it relates directly to what is being stored and not to the number of cores or sockets in a server (or a thousand servers) or some other marginally related accounting determinant.
- Additional backups beyond the Spectrum Protect storage pool[5] (whether on disk or tape) are not counted nor is the file and object data stored on tape cartridges managed in IBM tape libraries by *Spectrum Archive Enterprise Edition*. Given that the archiving of files and objects to tape is likely to increase and might someday soon represent a sizable slice of your total data stored, this is a significant advantage to being a Spectrum Suite customer.
- Of course, none of this would work if the pricing of the suite was onerous. Clearly, you can do the calculations to see if you are paying more than the sum of the piece parts or more than you now are paying. While the possible combinations are very large, IBM says that it has designed its pricing to be advantageous to the Spectrum Suite customer. IBM cites an example of a 40% savings for a typical use case, which certainly should get your attention.
- However, the economic benefits of the Spectrum Suite are more about the future than the present, since your data capacities likely are growing at a very high rate. You are looking to afford what likely is going to be unaffordable unless you make significant changes to your current practices, such as including the widespread use of compression and deduplication (to keep the required capacities at a lower level), encryption (to reduce the possibilities of unauthorized use of data), and protection (to keep your data collections available and accurate in multiple locations). Given that these functions are part of the Spectrum Suite, you can begin to see the advantage of having these capabilities to use wherever you see fit, without having to renegotiate a license with one or more vendors every time you grow or change your storage footprint or how you want to use it.

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[3] The software is downloadable for trial use.

[4] Additional customer-made copies, such as a DR copy of the pool for offsite storage, are not included.

[5] As described in footnote #4.

- But there is more. Spectrum Suite is hardware neutral. It works with just about any storage hardware. This is done mostly via LUN virtualization. Once done, your block data can be moved wherever you see fit. This is not new, but there still is a lot of storage that hasn't yet been virtualized and thus remains trapped where it resides. If it is easy to do and doesn't come with an additional cost, you now have a green light to getting most of your storage virtualized. In addition, you now can consider acquiring less costly hardware that fits with the functions and capabilities provided by the Spectrum Suite.
- There is a similar hardware-independent story for files and objects. These too are virtualized by the Spectrum Suite.
- Lastly, there are benefits to storage administrator productivity and error-reduction. With a single suite to learn and use, storage administrators will be able to manage more capacity more easily and quickly and probably with fewer errors. That all comes from familiarity and a common and easy-to-use GUI. In addition, the broadness of the suite gives them plenty of room for growth beyond what they now are doing. Everybody wins (except for those advocating more silos of storage).

IBM Spectrum Storage Suite – The Bundle

Hopefully, you see why buying a bundle rather than component parts that need to be integrated and tested (and staff needs to be trained to do so) can make very good sense and how well IBM Spectrum Suite covers many if not all of your storage provisioning and management requirements. By now, you no doubt are asking, *what does the Spectrum Suite bundle cost and in what ways can it be licensed?*

Let's start with a purchased (perpetual) license that is followed by annual maintenance charges. IBM has made this simple. You get all of the benefits of the Suite for $4000 per terabyte plus an annual maintenance and software upgrade charge of 20% per year after the first year.[6] Remember, these costs are based on

allocated physical capacities. If you can cram more data into a given space by using the included compression or can reduce what is being stored by deduplication, you are going to be paying less than the indicated $4000 a terabyte. As was indicated over the last few pages, there are other savings to be had, especially if you already are paying much more for similar or lessor functionality to one or more hardware or software vendors.

What if you want to pay for it on a monthly basis? IBM has a similarly straightforward and generally equivalent flat rate monthly licensing fee that includes the maintenance. Thus, whether you want to pay for it as a capital purchase or a monthly operating cost, IBM can accommodate your accounting and budgeting needs.

In addition, there also is a combination of the perpetual and monthly models that may be ideal for service providers or others with more complex storage needs. IBM calls this licensing option "utility". If neither the perpetual nor the monthly license fits, you should ask IBM about this third option.

Conclusion

This paper covered a lot of territory in a few pages, but by no means was it a detailed explanation of the capabilities of each software component of IBM Spectrum Storage Suite. That was not the goal. Hopefully, now you understand why a bundled suite may be the right solution for your enterprise. If you now are receptive to the idea and the possibilities provided by IBM's Spectrum Suite, go check it out!

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[6] Yes, $4K/TB is $4M a petabyte, and if you have many petabytes, this will become a significant sum and one reason that you might want to go with the monthly license. This is not freeware. You have to decide whether the offered bundle (a) will save you money (either directly or indirectly) over what you are doing today or might do tomorrow (say, by reducing or replacing some-to-many of your current storage

software and hardware costs, by needing significantly less physical capacity (due to compression and deduplication), by allowing you to more easily keep data at a lower and less costly tier (due to automated use- and rule-driven movement of data between tiers), etc.), (b) save you staff time to provision, manage, deliver, and protect your enterprise's data, and/or (c) allow a faster time-to-market or solution for your critical business needs. The best way to answer this question probably is by trying it out on a small fraction of your data. That way you will have credible data on which to base your determination.

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