

Unitrends Overview

June 2, 2015
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Unitrends has about 450 employees with 100 million revenue in the first quarter of 2015 with over 10,000 customers worldwide. It sells both Recovery-Series backup appliances and software-only virtual appliances. It supports leading virtual platforms such as VMware and Hyper-V, including 120+ Operating Systems.

Unitrends not only provides its unique all-in-one features in its physical appliances or virtual appliances (for small organizations), but also has its unique all inclusive Hardware/Software, Maintenance, Support new licensing model borrowed from Pure Storage – Every three years, any customer will receive and replace its old product for free for the same capacity as long as purchasing a Recovery-Series appliance with a 3 year or greater support contract, although its appliance does not give an innovate design with the latest technology such as erasure coding and object storage technology due to the limits of RAID Unitrends has been relying on. Many backup and storage vendors start to move the legacy RAID technology to erasure coding and object storage due to a large capacity size of a drive (e.g., a 6TB drive is in production). For example, [Quantum Lattus](#), next-generation object storage for big data archives, [NEC's Hydrastor](#), unique and highly engineered feature - erasure coding for data availability, and [Gridstore](#) all have switched from a legacy RAID technology to erasure coding and object storage technology due to the fact: 1) traditional RAID technology is not sufficient for duplicated data because if one block from an incremental or a weekly-full backup is lost, the restore is not possible; 2) the larger a disk's capacity, the greater the chance of bit error” 3) erasure coding might be up to 10,000 times better resilience and better durability than RAID. See an excerpt below from [RAID Vs. Erasure Coding](#) for details from which you can see “[Why RAID 6 stops working in 2019](#)”.

“RAID 6, the dual-parity approach, took a major hit with the release of 4TB and larger drives. Rebuild is measured in days, and the risk of another drive failing, which could result in data loss through bad blocks, is on the [threshold of unacceptable](#).”

It is worth noting that Unitrends is the only vendor who can back up Cisco UCS service profiles that contains many critical configuration data (e.g., network attributes, QoS, BIOS settings, firmware versions, each firmware from NIC, HBA and RAID)

The County of Los Angeles is evaluating a disk-to-disk backup solution to back up its data to its own private cloud or data center with an option to a public cloud in the future.

According to 2014-2015 DCIG Buyer's Guide, Unitrends #1 virtual software beat CommVault and Veeam.

In June 2014, Unitrends also appears in Gartner Magic Quadrant for Enterprise Backup Software and Integrated Appliances as a Niche Player first time ever.

The definition of each Magic Quadrant:

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Magic Quadrants provide a graphical competitive positioning of four types of technology providers, where market growth is high and provider differentiation is distinct:

- **Leaders** execute well against their current vision and are well positioned for tomorrow.
- **Visionaries** understand where the market is going or have a vision for changing market rules, but do not yet execute well.
- **Niche** Players focus successfully on a small segment, or are unfocused and do not out-innovate or outperform others.
- **Challengers** execute well today or may dominate a large segment, but do not demonstrate an understanding of market direction.

Below is a questions and answers session held on June 2, 2015:

Q1: Could you tell me how raw capacity (TB) listed below is calculated?

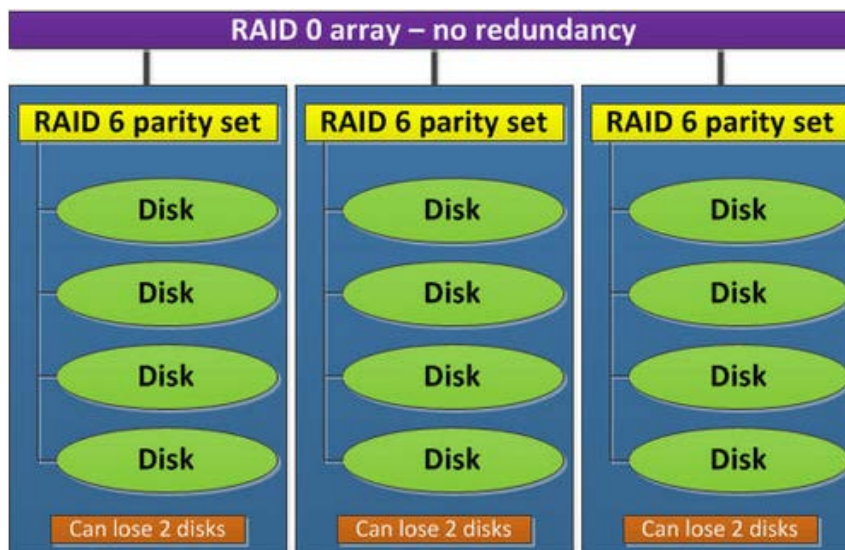
A1: 1TB is configured as RAID-1 for OS, while 96TB is configured as RAID-60 for data.

Since a RAID-60 array comprises 2 RAID-6 arrays in a stripe, a single RAID-6 set comprises 18 drives including 2 parity drives. With N-2, 48TB is a raw capacity per single RAID-6 (16x3 = 48). With RAID-60, a raw capacity is at 96TB (2x48).

Q2: Could you tell me how many SSDs exist in a Recovery-943S appliance and how the caching works in details?

A2: One Samsung 480GB SSD exists in a 943S for caching.

Q3: Can you tell me how 18 SAS drives are configured within a physical appliance? See a graphics below for your reference!



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Source: <http://www.techrepublic.com/blog/the-enterprise-cloud/understand-when-raid-60-is-overkill/>

A3: Two RAID6, each with 18 drives and 2 for parity.

Q4: Could you tell me how Adaptive and Global Deduplication work?

Note: Unitrends deduplication is based on byte-level and a target side.

A4: Adaptive Deduplication is a hybrid data reduction technology combining inline compression with post-processing data deduplication that adapts dynamically to multiple factors. Global deduplication compares all block-size data on storage and reduce the footprint while adaptively keeping the most recent and active copies readily available for faster recovery.

Q5: What is Recovery Archive RXDA?

A5: Recovery Archive RXDA is a 1U device with 4 swappable drive bays for archiving. Archive sets are copied from the appliance to the drives and stored offline for retention. The drives can be any 3.5" with capacities 1-4TB and configurable to form stripe across multiple disks.

Q6: What is Synthetic Full Backup?

A6: Synthetic full is a post-process backup done on the appliance by consolidating existing backup sets. For example, a full and week of incremental are rolled into new synthetic full without requiring a new full. This help eliminate long backup windows and decrease recovery time.

Q7: What's a brand name in your RAID controller?

A7 LSI controller!

Q8: Who is building Unitrends' appliances? For example, Taiwan's [Super Micro Computer, Inc.](#)

Note: Usually, in my opinion, we might give an extra credit if the product is built in the U.S.A. (made in the U.S.A.)

A8: MBX Systems – Libertyville, Illinois

Q9: Does Unitrends have a plan to switch from a legacy RAID technology to an erasure coding technology in the near future because RAID 6 might stop working in 2019?

See "[Why RAID 6 stops working in 2019](#)" for your reference.

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A9: Plans to switch from RAID6 have not yet been roadmap. Unitrends is fast to adopt new and proven technology in the industry.

Q10: How long does it take to recover a 6TB drive with 80% capacity full?

A10: I will probably take a day or two to complete the full recovery!

Q11: When a second Recovery-943S appliance is added, do we need to reconfigure the backup setting to extend the original volume (a continuous volume) or do we have to create a new separate volume or a discreet volume in order to use the new volume?

A11: When a second 943S is added, the management console is consolidated BUT the backup volumes remain separate. For example, servers will have to be redistributed amongst the two appliances for load balancing. The storage is not chained or clustered, but remain separate silos.

Q12: How long does it take to recover a 6TB drive with 80% capacity full?

A12: The Recovery-943S uses 3TB drives. 7.2K drives writes on average 115MB/sec or ~7.25 hours to rebuild 3TB. During the build time, the appliance will remain operable and can lose up to 2 drives per raid 6. (4 drives total, 2 in each RAID6 of the RAID60).

Q13: Does Unitrends support multi-stream?

A13: Unitrends supports multi-stream for multiple backups, but it is one stream per backup.

Q14: Does Unitrends support REST API?

A14: REST API is roadmap for late 2015 or early 2016.

Q15: Since Unitrends offers NAS backup over NFS or SMB 2.0 or SMB 3.0, what is a disadvantage in comparison to other vendors' backup (e.g., NetBackup or Avamar) in term of over NFS?

A15: I'm not too familiar with how Avamar/NetBackup performs NFS/CIFS backup, but Unitrends provides file-level with include/exclude. Alternatively, we support NDMP snapshots if the device hosting the NFS share has NDMP. More details about the configuration here: <http://www.unitrends.com/documents/administrators-guide/> (Protecting NAS Devices)

Q16: Since Unitrends' backup software does not support array-based snapshots, what is a disadvantage Unitrends' customer will have?

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A16: Unitrends will release SAN Snapshot features late 2015 limited to some SAN vendors. We anticipate releases for NetApp and EMC VNX first.

- Disadvantages
 - Cannot snapshot entire SAN/LUN.
 - Cannot use native SAN replication (NetApp to NetApp replication)
 - Cannot backup iSCSI mounts without going to the host server
 - Can't leverage 10Gb/FC.
- Advantages
 - Backups can target VMs, NDMP volumes, CIFS, NFS volumes without snapshotting the entire SAN.
 - Better deduplication and retention
 - Easier to perform granular restore for VMs, databases, single shares, and versioning.
 - Can still perform SAN-direct backup for VMware.

Q17: What's the ingest speed from Recovery-943S appliance (performance per controller)?

For example, EMC Data Domain DD990 has Inline Backup Speed at 31TB per hour, while ExaGrid (EX210-GRID) has post-process Ingest Speed at 4.32 TB per hour.

Source: August 2014, Vendor Published Numbers

A17: Unitrends Recovery-943S appliance in-line backup speed is at 4.5TB per hour.

Q18: Does Unitrends support storage platform snapshots, as well as index storage platform snapshots that will perform granular restores from snapshots quickly, instead of performing time consuming restore without indexing?

A18: Today, Unitrends does not support storage platform snapshots, as well as index storage platform snapshots. This feature is currently roadmap for Q4 2015.

Challenges:

- Mirrored RAID-6 costs the RAW storage by 50%, plus additional 20 overhead while erasure coding typically requires only 25% raw capacity overhead and provides more resilient when an additional appliance is added.
- In the event of the disk failure, it may take one or two days to recover the backed up data into a new 6TB drive via a legacy parity recovery technique.
- Traditional RAID is not sufficient for duplicated data because if one block from a weekly backup is lost, the restore is not possible.
- It does not support Microsoft Hyper-V Direct Disk Path backup technique.
- EMC Data Domain is still the No. 1 vendor in both Enterprise Backup Software and Integrated Appliances, as well as Deduplication Backup Target Appliances

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- EMC **ProtectPoint** is able to send backup data (jobs) from its primary storage system (MAX3 only) directly to Data Domain, bypassing the traditional backup server bottleneck, thus improving the performance dramatically.

Conclusion:

Unitrends flagship Recovery-943S appliance has its values or provides its unique all-in-one features in its physical appliances or virtual appliances (for small organizations), but also has its unique all inclusive Hardware/Software, Maintenance, Support new licensing model.

Per Gartner's Magic Quadrant chart, Unitrends is placed at a Niche Player position. Therefore, it fits on a small segment, for example, SMBs or some of the medium enterprises, traditionally. It may not fit in large enterprises due to its in-line backup speed at 4.5TB per hour, as well as a heavy overhead coming from mirror-RADI-6 in its flagship Recovery-943S appliance.

Recommendation:

Follow the Gartner's recommended ...

Recommended Reading:

1. [Magic Quadrant for Enterprise Backup Software and Integrated Appliances – 16 June 2014 ID:G00262146](#)
2. [Magic Quadrant for Deduplication Backup Target Appliances - 31 July 2014 ID: G00262137](#)
3. [Magic Quadrant for Solid-State Arrays - 28 August 2014 ID:G00260420](#)
4. [Erasure coding vs Raid as a data protection method](#)
5. [L.A. CTO: We are actively upgrading city's IT in the cloud](#)

Acknowledgement

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