

Highlights

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Infinidat 2023 Predictions Highlight Cyber Resilience

Posted by Mike Heumann, Febuary 3, 2023

Infinidat's Eric Herzog, Chief Marketing Officer, provides his 2023 predictions:

Convergence of cybersecurity and storage will become cornerstone of enterprise IT strategy

I predict that storage will be part of every comprehensive cybersecurity strategy in every large organization, buoyed by cyber resilience. CIOs and CISOs continue to increasingly realize that, if they don't combine storage with cybersecurity, they're leaving a gap in their corporate cybersecurity strategy. IT leaders are accustomed to protecting the network and endpoints, deploying firewalls and looking at the application layer. However, all of their valuable data ends up on their enterprise storage. The great awakening in the enterprise market in 2023 will be that, if an enterprise storage solution does not have the capabilities to help combat a cyberattack, the C-suite and the IT team are leaving the organization severely exposed.

Cyber resilience will be recognized as necessary for primary and secondary storage as a safeguard against cyberattacks and internal threats

I predict that cyber resilience will be front and center in the enterprise storage market in 2023. Cyber resilience is among the most important and highly demanded requirements of enterprises today to combat cyberattacks across the entire storage estate and data infrastructure. Smart cyber criminals won't only attack your primary datasets, but also attack your secondary datasets, like backup. New levels of cyber storage resilience will need to be deployed in 2023 in both primary and secondary storage environments. There is a growing awareness that "cyber disaster plans" need to be put in place with the right set of capabilities to initiate and execute rapid recovery when a cyberattack happens. It's

crucial to use an immutable snapshot of the data to ensure that the data has not been compromised. Enterprises will need to boost their ability for near-instantaneous recovery from a known good copy of data.

Demand for ease of deploying cyber storage, resilience and advanced security technologies will grow significantly I predict that ease of deploying cyber storage, cyber resilience



and advanced security technologies will be a major factor in buyers choosing a solution provider. Enterprises and service providers are increasingly seeking easy-to-deploy and easy-to-use solutions that meet their needs for cyber storage resilience and integrated security technologies. They want not only automation, but also the next level up with autonomous automation. End-users don't want complex set-ups anymore. They want to be able to quickly and efficiently access forensic environments, and when it comes to recovery of data, they expect two or three clicks, and then be done with it. This will be the new reality of 2023.

Enterprise Storage Infrastructure Innovation in Space – Data Centers



Posted by Karen Heumann, Febuary 3, 2023

Space travel, increasing satellite use, and data storage needs, are all converging to necessitate enterprise storage infrastructure innovation. And, as those areas develop, there is an increasing need to address space debris, including space traffic management to prevent collisions.

There are <u>8261 individual satellites</u> orbiting Earth; 4852 are active. By the end of January 2022, there were 12,293 objects launched into the space. There are 31 different launch facilities listed by <u>UNOOSA</u>, including air-based, sea-based and even submarine-based launches. When a relatively close satellite reach their useful life, <u>engineers slow it down</u> by using up the remaining fuel, causing it to fall out of orbit and burn up in the atmosphere. Higher satellites are blasted even higher because it takes less fuel to put it farther into space than to send it back to Earth. If debris is expected to outlast the fall and not entirely burn up, the orbits are timed so that the remaining debris falls in the Pacific Ocean, in the Spacecraft Cemetery.

NASA space missions, SWOT and NISAR produced 100 terabytes of data per day. The amount of data to/from space will reach over <u>500 exabytes by 2030</u>. Lonestar Data Holdings wants to build a data center on the Moon to back up the world's data and support lunar edge processing. The company plans to use <u>robots to install its hardware in lava tubes</u> on the moon to shield its servers from wide swings in temperature and cosmic radiation. The Moon rotates but takes as long to spin as it does to complete its

monthly orbit around Earth, resulting in <u>synchronous tidal locking</u>. All the solar system's large moons are tidally locked with their planets. This results in the same side of the moon always facing Earth, creating a constant line of sight for data center communications. NASA will send a Nova-C lander to the Moon's South Pole on an Artemis spacecraft that is scheduled to include a hardware prototype from Lonestar, a one-kilogram storage device with 16TB of storage.



Skycorp, Lonestar's space logistics company, selected Phison to supply the storage for the Lonestar 2023 mission. Phison's 8TB M.2 SSD had to pass NASA Technology Readiness Level 6 (TRL-6) certification including running in deep cryogenic temperatures and in a vacuum, electromagnetic environment testing, and vibration and shock testing to simulate launching and landing. Phison made an 8GB SSD used on the Mars Perseverance Rover and a 4TB SSD in Skycorp's RISC-V computer on the International Space Station. They include extra shielding to reduce the risk of radiation damaging data in the NAND data cells for space qualified SSDs. Skycorp just announced they hired Lieutenant General Steve Kwast (USAF ret) as Skycorp's CEO.

The <u>European Commission</u> selected Thales Alenia Space lead the ASCEND (Advanced Space Cloud for European Net zero emission and Data sovereignty) feasibility study for data centers in orbit, as part of Europe's vast Horizon Europe research program. Seagate and Ball Aerospace <u>announced a</u> <u>collaboration</u> to test high-capacity commercial data processing and storage devices for spaceflight applications. Once established, <u>moon-based data centers</u> could become the springboards for commercial applications, advanced technologies, innovations and research.

Amazon Web Services (AWS) deployed a suite of computing and <u>machine learning (ML)</u> software on an orbiting satellite in a ten month experiment conducted with D-Orbit in low Earth orbit (LEO). They

conducted an analysis of space data directly on satellites while only downlinking the most useful images for storage and further analysis. The team applied ML models on satellite sensor data to identify objects in the sky, such as clouds and wildfire smoke, and objects on Earth, including buildings and ships. "As we look at the new missions in space, we're going to be able to go out and repair satellites and operate from space stations which we could never do before," Clint Crosier, director of AWS's aerospace and satellite business said. "We're also going to do asteroid mining, and entertainment and tourism in space, which all require robotics, greater autonomy, more processing speed and more bandwidth.

Enterprise Storage Infrastructure Innovation in Space – Trash Collection



Cloud technology may also be applied to the identification and management of <u>space debris</u>, which astronauts at the International Space Station have had to navigate around to prevent catastrophic collisions. Peggy Whitson, a US biochemistry researcher and retired Nasa astronaut, says there are models suggesting that if nothing is being done to reduce space debris by 2050, it will be hard to get out of low Earth orbit where the majority of satellites are. "There are various intergovernmental agreements that if you launch a satellite, you should be able to bring it down before it fails," Whitson said. "There's going to have to be some enforcement of that, but I also see it as a new avenue for technologies to either refuel, refurbish or re-orbit satellites, or collect them to reuse all the metals and ores in them."

The Department of Defense's global Space Surveillance Network (SSN) sensors <u>track 27k+ pieces of</u> <u>orbital debris, or "space junk."</u> Much more debris -- too small to be tracked, but large enough to threaten human spaceflight and robotic missions -- exists in the near-Earth space environment. Since both the debris and spacecraft are traveling at extremely high speeds (approximately 15,700 mph in low Earth orbit), an impact of even a tiny piece of orbital debris with a spacecraft could create big problems.

Microsoft is also looking to apply its cloud services in space applications. In Australia, it has <u>teamed up</u> <u>with Nokia, the South Australian government and the Australian Institute for Machine Learning</u> to explore how advanced cloud computing, AI, computer vision and machine learning can be applied in space. They are expected to model and simulate complex space operations and systems, build algorithms to process onboard satellite data, develop solutions to remotely operate satellites, and address space domain awareness and debris monitoring.

Space technology startup LeoLabs predicts potential collisions between space objects and satellites using ground-based radars. LeoLabs was running its system on-premises, but it could take up to eight hours to calculate the probability of a collision between any two objects. Using <u>high-performance</u> <u>computing</u> resources on AWS, LeoLabs reduced that to just 10 seconds, enabling satellite operators to quickly adjust the course of their satellites in time to avoid a collision. Crosier, a retired US Air Force major-general who served as director of space force planning in the Office of the Chief of Space Operations before joining AWS explains, "That's <u>real-time space traffic management</u> and that's what cloud and the advanced processing capabilities of AI and ML will bring to these problem sets."

Some upcoming missions, notable planetary events, and real-time space traffic needs include: 2023 March - Intuitive Machines 1 (TO 2-IM) - Launch of NASA CLPS lunar lander 2023 Quarter 1 - Peregrine Mission 1 (TO 2-AB) - Launch of NASA CLPS lunar lander 2023 April 14 - JUpiter ICy moons Explorer (JUICE) - Launch of ESA mission to the Jupiter system 2023 June-July - Chandrayaan 3 - Launch of ISRO (India) Lunar Orbiter, Lander, and Rover to Moon 2023 June (NET) - Intuitive Machines 2 (PRIME-1) - Launch of NASA CLPS lunar rover 2023 June (NET) - Lunar Trailblazer - Launch of NASA SmallSat mission to study lunar water 2023 June 20 - Bepi-Colombo - ESA mission makes its third Mercury flyby 2023 July - Luna 25 - Launch of Russian lunar lander 2023 August 21 - Parker Solar Probe - NASA solar mission makes sixth Venus flyby 2023 September 24 - OSIRIS-Rex - Returns to Earth with sample of asteroid Bennu 2023 October 10 - Psyche - Launch of orbiter mission to main belt asteroid 16 Psyche 2023 - Smart Lander for Investigating Moon (SLIM) - Launch of JAXA lunar lander mission 2023 - Masten Mission 1 (TO 19C) - Launch of NASA CLPS lunar lander 2023 - Blue Ghost 1 (TO 19D, Firefly) - Launch of NASA CLPS lunar lander 2024 April - Intuitive Machines 3 (TO CP-11 PRISM 11) - Launch of lunar lander and rovers 2024 September 5 - Bepi-Colombo - ESA mission makes its fourth Mercury flyby 2024 Sept - Martian Moon eXploration (MMX) - Launch of JAXA mission to return sample from Phobos 2024 October - Europa Clipper - Launch of NASA Jupiter Orbiter to study Europa 2024 October - Hera - Launch of ESA mission to asteroids Didymos and Dimorphos 2024 November - Griffin Mission 1 (TO 20A VIPER) - Launch of NASA CLPS lunar lander 2024 December 2 - Bepi-Colombo - ESA mission makes its fifth Mercury flyby 2024 December 13 - Lucy - NASA asteroid mission makes second Earth flyby

Not All News about the Economy is Bad... Cue Data Centers



Posted by Mike Heumann, February 3, 2023

While we have seen lots of headlines about job cuts in the tech sector, and macroeconomic concern about a potential recession, there is a lot of good news out there for high-tech as well. An example of this is the outlook for new data center builds, which drives large portions of the tech sector. <u>IndustryARC</u>, a customer and supplier intelligence firm, recently released its <u>Global Data Center Market</u> <u>Report and Forecast</u>.

The forecast is data center market <u>will reach \$418 billion by 2030</u>, growing at a CAGR of 9.6% during the forecast period 2023-2030. The drivers for this market increase include widespread digital transformation across all industry verticals, the growth in internet data traffic (especially driven by 5G), adoption of hybrid cloud architecture, and demand for multi-cloud solutions. A key driver is infrastructure to take advantage of the massive amount of useful data that new 5G-enabled IoT solutions will generate, prompting companies to make investments in new data centers and/or cloud resources.

Some of IndustryARC key findings include:

- The emergence of "green data centers" as a data center market growth driver
- The expectation that colocation data centers will accelerate growth (10.3% CAGR)
- Data security concerns could act as potential damper on market growth

Key Data center Opportunities Analysis:

Integration of Cloud Computing

Today, <u>94% of all computing workloads can be run in the cloud</u>, making it easier for organizations to move to the cloud. When combined with the growing volume of data generated by websites and mobile apps, as well as the increased emphasis on delivering customer-centric applications to provide customer satisfaction, the result is a strong demand for more data processing capabilities, which drives the demand for data centers.

Automation of Business Processes

Data centers are being used to automate enterprise business processes while cutting down operational costs. <u>More than 50%</u> of the global organizations intend to use automation to boost their employee productivity and performance. Organizations are investing in data center resources (whether physical or in the cloud) to monitor and manage these automated processes, with centralized control and reporting.

Deployment of 5G Infrastructure

5G services have the potential to drive exponential growth in data consumption by providing faster connections to mobile and IoT devices. Cisco expects that 5G would support more than 10% of the world's mobile connections by 2023, with an average speed of 575 Mbps (13 times faster than the average mobile connection today). As more data becomes latency-sensitive and demands faster access, 5G will drive the construction of new data centers in urban areas.

The Russia-Ukrainian War Impact

The Russia-Ukraine War carried immediate consequences for the data center and digital infrastructure space. Most data centers and cloud providers withdrew from Russia, while the war created supply chain disruptions with a global impact.

Other Key Findings

- The <u>Edge Computing Market</u> is projected to grow at a CAGR of 26.2% by 2030, owing to the increased adoption of IoT in various technologies including smart homes, smart cities, Industry 4.0 and connected vehicles.
- The <u>Data Center Colocation Market</u> is projected to grow at a CAGR of 12.3% by 2030. The market growth is attributed to several factors such as the growing number of data centers, technological developments, growing expenditure through regulated cloud providers and colocation networks and others.
- <u>Modular Data Center Market</u> is estimated to grow at a CAGR of 16.8% by 2030. Adoption of new technologies in industries and ease of mobility and scalability is driving market growth.
- <u>Data Center Liquid Cooling Market</u> is anticipated to grow at a CAGR of 25.6% by 2030. Rising need for environmental-friendly solutions and integration of artificial intelligence in the cooling systems is driving market growth.

List of Top Companies in Data Center Market: IBM Corporation, Amazon.Com Inc., Equinix Inc, Hewlett Packard Enterprise Company, Cisco Systems Inc, Alphabet Inc, Microsoft Corporation, NTT Communications Corporation, Oracle Corporation, SAP SE, Dell Technologies, Hitachi Ltd, Schneider Electric, Huawei Technologies Co. Ltd., Comarch SA

Another Sector Benefiting From Data Center Growth -Construction



According to <u>Arizton's latest research</u>, the India data center construction market will grow at a CAGR of 15% from 2022-2028. Around <u>80% of corporate banks in India</u> expect to operate their trade finance and treasury workloads on cloud technology by 2024. 5G deployment to increase edge data center investments, procurement of renewable energy in data centers, growing rack power density, and availability of liquid cooling to support AI & ML workloads are driving the growth of the India data center construction market.

In November, AWS <u>announced</u> the launch of its new cloud region in Hyderabad. The increased data generation will fuel demand for large storage facilities in India. Indian companies, such as Adani Group and Hiranandani Group, and investors, such as Microsoft, EdgeConnex, CapitaLand, Amazon, and the Mantra Group, invest in data centers in India. Existing companies, such as STT India, CtrIS, and Nxtra by Airtel, are increasing their presence and capacities in the country. <u>Yotta Infrastructure</u>, NTT Global Data Centers, and ST Telemedia Global Data Centres India have expanded their presence in India with several hyperscale data center developments across Mumbai, Tamil Nadu, and Uttar Pradesh.

State governments in India are <u>investing in constructing</u> and expanding State Data Centers (SDCs). Data center development in India is also carried out by central government agencies, such as the National Informatics Centre (NIC) and the National Payment Corporation of India (NCPI). In 2022, there was significant investment in 20+ projects, with Maharashtra contributing <u>54.13% of investments</u>. The State Government of Maharashtra developed a new Renewable Energy Policy to <u>implement 17.36 GW</u> of transmission system-connected power projects by 2025.

Adani Group formed a joint venture called <u>AdaniConneX</u> with EdgeConneX, a global data center provider, to build multiple hyperscale data centers with a cumulative capacity of 1 GW in Chennai, Mumbai, Noida, Vizag, and Hyderabad. In August, the Madhya Pradesh government <u>announced</u> a target to achieve a green energy generation capacity of around 20 GW by 2030. Further, the Uttar Pradesh government <u>announced</u> that it had released a draft of Solar Energy Policy 2022 and plans to establish 20 solar cities over the next five years.

Yotta NM1 Datacenter



Prominent Construction Contractors- AECOM, AHLUWALIA CONTRACTS (INDIA) LTD., DEC Infra, DSCO Group, Emerge Engineering, Larsen & Toubro (L&T), Prasa, Listenlights, Sterling and Wilson (Shapoorji Pallonji Group), Turner & Townsend, Tata Projects, Vastunidhi

Prominent Support Infrastructure- ABB, Blue Box (Swegon), Caterpillar, Climaveneta Climate Technologies (Mitsubishi Electric), Cummins, Delta Electronics, Eaton, Kirloskar Oil Engines (KOEL), Legrand, NetRack Enclosures, Panduit, Riello Elettronica, Rittal, Rolls-Royce, Schneider Electric, Siemens, STULZ, Vertiv

Prominent Data Center Investors- Nxtra by Airtel, Amazon Web Services (AWS), CapitaLand, Colt Data Centre Services, CtrIS, BAM Digital Realty, Equinix, NTT Global Data Centers, Pi DATACENTERS, Reliance Jio Infocomm, ST Telemedia Global Data Centres, Sify Technologies, Web Werks, Yotta Infrastructure Solutions

New Entrants- AdaniConneX, Chindata Group (Bridge Data Centres), Princeton Digital Group (PDG), SpaceDC





G2M Research Multi-Vendor Webinar Series

Our webinar schedule is below. We are offering a Cybersecurity series and an Enterprise Storage & Technology multivendor series.

January 31 Pliops XDP-RAIDplus launch webinar featured <u>Tony Afshary</u>, Vice President, Products and Marketing at <u>Pliops</u>; <u>Tom Sanfilippo</u>, Chief Technical Officer at <u>Paperspace</u> (a Pliops XDP-RAIDplus user) and <u>Yuyang Sun</u>, Strategic Planner at <u>Solidigm</u> (a Pliops partner) on the value XDP-RAIDplus provides them. Pliops XDP-RAIDplus is the best-in-class protection solution for NVMe[™] and NVMe-oF[™] environments. This award-winning data protection solution overcomes the limitations of conventional RAID controllers with emphasis on data protection and resiliency, enabling higher endurance and usable life, reducing build times, and unlocking the capacity of high-density enterprise SSDs. The webinar video is available to <u>view</u> and a copy of the slidedeck is available <u>here</u>.

Interested in Sponsoring a webinar? Contact <u>G2M</u> for a prospectus. We can create custom webinar, custom webinar series, and add or modify topics to specifically appeal to your target audience. <u>View</u> our webinars and <u>access</u> slide deck presentations on our website.

Cybersecurity

Cybersecurity for Remote Workers & Mobile Devices	March 23
The Increasing Complexity of Cybersecurity Regulatory & Compliance for the Financial Services Industry	May 25
xDR- The Promise versus the Reality	August 3
10 Features of an Effective Attack Surface Management Tool	September 7

How Secure is the Cloud for Your Workloads?	October 12
Do You Need a SIEM? Use Cases Where a SIEM Makes Sense.	November 9
Enterprise Storage & Technology	
The Need for Speed: NMVe, NVMe-oF, & Data Processing Accelerators	February 21
<u>Memory As The New Storage – CXL, Extended Memory, & Persistent</u> <u>Memory. What Does the Future Hold?</u>	March 7
Supercharging Oracle MySQL Performance, Scalability, & Efficiency with Pliops	March 21
Storage Architectures for Artificial Intelligence & Machine Learning	April 4
Software-Defined Flash Memory Architectures	May 9
Storage & Compute Architectures for Healthcare & Imaging Applications	June 27
<u>NVMe & NVMe-oF – Past, Present, & Future</u>	July 11
GPUs, SSDs, & Shared Memory: Accelerating Computing?	August 22
<u>Securing Data – How Storage & Cybersecurity Technologies Can</u> Work Together	Sept 26
<u>The Open Compute Platform (OCP) Movement – Providing</u> Compute-At-Scale Value to On-Premises Deployments	October 24
Storage Architectures for HPC Clusters	November 21
2024 Trends – Cloud, On-Premises, & Hybrid Compute/Storage	December 12



Upcoming Conferences

Cisco Live, Amsterdam, Netherlands
Gartner Security & Risk Management, Mumbai, India
ESNA Expo, Long Beach, CA
ITExpo East, Fort Lauderdale, FL
Gartner Security & Risk Management Summit, Dubai
Mobile World Congress Barcelona
Rice University Energy HPCC Conference, Houston, TX
CloudExpo Europe, London
Gulf Information Security Expo, Dubai, UAE
Gartner Data & Analytics Summit, Grapevine, TX
GTC CPU Technology Conference, San Jose, CA
Gartner Security & Risk Management, Sydney, Australia
ISC West, Las Vegas
IST Information Security Expo, Tokyo, Japan
NABShow, Las Vegas
HIMMS Global Health Conference, Chicago, IL
Privacy Symposium, Venice, Italy
CyberSec Europe, Brussels, Belgium
RSA Conference, San Francisco

May 1-3	IAHSS AC&E, Nashville, TN
May 2-4	ACT Expo, Anaheim, CA
May 9-12	Black Hat Asia 2023, Singapore
May 15-17	Forth Roadmap Conference, Portland, OR
May 16-17	SIA GovSummit, Washington DC
May 21-25	ISC, Frankfurt, Germany
May 22-25	<u>Dell World</u> , Las Vegas
May 22-25	<u>Government Fleet Expo</u> , Dallas, TX
June 2-6	School Transportation Network Expo East, Indianapolis, IN
June 4-8	<u>Cisco Live</u> , Las Vegas
June 5-7	Gartner Security & Risk Managemnt, National Harbor, MD
June 7-9	Synnex Red, White and You, Greenville, SC
June 11-14	36th Electric Vehicle Symposium & Expo, Sacramento, CA
June 14-16	<u>Interop Tokyo</u> , Chiba, Japan
June 20-22	HPE Discover, Las Vegas
June 20-22	Info Security Europe, London
July 14-19	School Transportation Network Expo, Reno, NV
August 5-10	Black Hat USA, Las Vegas
August 8-10	Flash Memory Summit, Santa Clara, CA
August 28-31	VMWare Explore, US, San Francisco, CA
August 30-Sept 1	Security Expo, Sydney, Australia
September 11-13	Gartner Security & Risk Management, London
September 11-13	Global Security Exchange, Dallas, TX





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