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Enterprise Storage &  
Technology Newsletter

November 2022

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OCP 2022 Wrap Up Webinar

The Latest and Greatest in SSDs, CXL, Accelerators,  
and Other Big Trends for the Datacenter and the  
Cloud

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Tuesday, November 15  
10:00am PST



**OPEN**  
Compute  
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# Gartner Magic Quadrant for Primary Storage

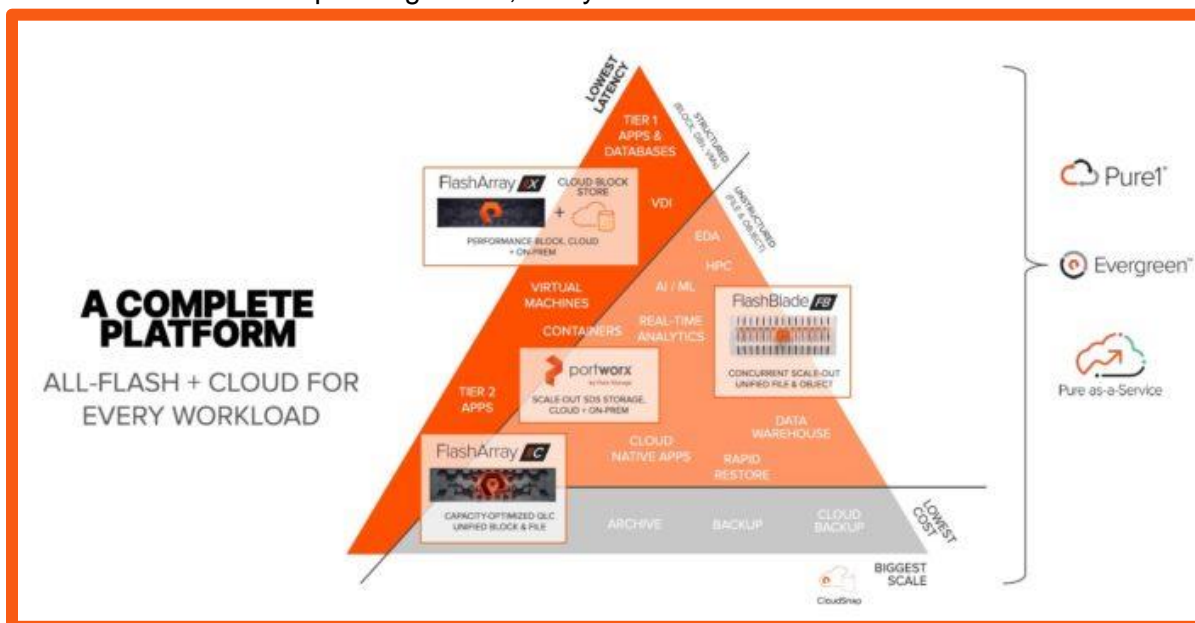


# PURESTORAGE®

[Gartner Magic Quadrant for Primary Storage Leaders](#) are Pure Storage, NetApp, HPE, Dell, IBM, Huawei, Infinidat, and Hitachi Vantara. Gartner defines the primary storage market as vendors that offer dedicated products or product lines for solid-state arrays (SSAs) or hybrid storage arrays, or both, as well as software-defined storage (SDS) software. Hybrid storage arrays include both solid-state drive (SSD) and hard-disk drive (HDD) configurations. SSA products are 100% solid-state technology-based systems that cannot be combined or expanded with HDDs. SSAs and hybrid storage arrays must have both a dedicated product name and associated model number. SDS software is designed to operate on industry standard hardware either on-premises, hybrid cloud or in the public cloud.

[Pure Storage](#) was named a Leader for the 9th year in a row, five years as a leader for Solid-State Arrays and four years for Primary Storage. Pure's portfolio consists of FlashArray//XL, FlashArray//X and FlashArray//C, which are positioned at high-, medium- and low-performance workloads, and Pure Cloud Block Store, which brings primary storage to AWS and Microsoft Azure. [Pure Fusion](#), a cloud-based self-service offering unifies all of the vendor's storage offerings and optimizes and rebalances workloads. Vertically integrated DirectFlash Modules are managed directly by the Purity OS, ensuring consistent performance and optimized costs at the media level. Customers praise the ease of deployment and ease of use, resulting in operational expense savings.

"Pure has become the clear leader in disrupting the storage industry," said [Shawn Hansen](#), VP and General Manager, FlashArray, Pure Storage. "We led with the first designed-for-flash enterprise array and as-a-service business models. Now as we've unveiled the industry's first self-service, storage-as-code product, the market is entering the next stage of rapid change as it speeds towards the simplicity and automation of a cloud operating model, everywhere."



[NetApp](#) Cloud Volumes ONTAP can be run in all major public clouds, giving applications the same set of data services whether running on-premises or in the public cloud. New capabilities include the ability to use ONTAP licenses across on-premises and public deployments, advanced ransomware detection, and an in-chassis, nondisruptive upgrade to A900 and FAS9500 with PCIe Gen-4.

[HPE GreenLake's](#) cloud services have gained considerable momentum with advances in several new hybrid cloud offerings, including HPE GreenLake for Private Cloud Enterprise. HPE Alletra and HPE Primera for mission-critical workloads provide a 100% data availability guarantee.

[Dell Technologies](#) APEX Data Storage Services is a standard STaaS offering with a clear pricing calculator and flexible options for performance, subscription term and location of the service. Dell Technologies' strength in standards-based x86 technology across the Dell storage portfolio translates to expeditious parts availability and support across the globe.

[IBM](#) Spectrum Virtualize for Public Cloud software-defined architecture can be deployed on-premises, in public cloud or in colocation to provide the same data services irrespective of where the data is stored. [IBM's Safeguarded Copy](#), FlashSystem Cyber Vault, IBM Spectrum Sentinel, IBM QRadar integration and additional security features provide a comprehensive set of capabilities to protect and recover from cyberattacks.

[Hitachi](#) Ops Center's SaaS-based Clear Sight provides IT with large-scale storage fleet asset management capabilities that improve return on assets and cost optimization efforts. [Hitachi Vantara Modern Storage Assurance guarantee](#) is designed to extend asset investments up to 10 years and provide IT clients with total cost of ownership (TCO) savings.

[Infinidat](#) has petabyte (PB)-scale offerings in both hybrid and flash configurations, achieving favorable dollar per I/O and dollar per watt returns that underpin compelling TCO benefits. Infinidat customers express a high level of satisfaction with its technical support and ease of use that is grounded by extensive service-level guarantees.

[Huawei](#) has avoided the supply chain and component shortage issues that affected the lead times and price increases of its industry peers, maintaining normal lead times throughout the trailing 12-month period. Huawei maintains global component supply centers, integrated with its billing and fulfillment capabilities, to accelerate onboarding clients with STaaS infrastructure.

# The Impacts of Civility & Incivility on Motivation & Performance

[Christine Porath](#), a Management Professor at Georgetown University's McDonough School of Business, studies the impacts of civility and incivility on motivation and performance in the workplace. Her TED talk, [Why being respectful to your coworkers is good for business](#), discusses some of the results of this research. Highlights include the following:

Either you lift people up by respecting them, making them feel valued, appreciated and heard, or you hold people down by making them feel small, insulted, disregarded or excluded. And who you choose to be means everything. Incivility made people less motivated: 66 percent cut back work efforts, 80 percent lost time worrying about what happened, and 12 percent left their job.

Incivility is a bug. It's contagious, and we become carriers of it just by being around it. It affects our emotions, our motivation, our performance and how we treat others. It even affects our attention and can take some of our brainpower. And this happens not only if we experience incivility or we witness it.

Researchers in Israel have shown that medical teams exposed to rudeness perform worse not only in all their diagnostics, but in all the procedures they did. Steve, a physician, told me about a doctor that he worked with who was never very respectful, especially to junior staff and nurses. But Steve told me about this one particular interaction where this doctor shouted at a medical team. Right after the interaction, the team gave the wrong dosage of medication to their patient. Steve said the information was right there on the chart, but somehow everyone on the team missed it. He said they lacked the attention or awareness to take it into account. Simple mistake, right? Well, that patient died.

In a biotechnology firm, colleagues and I found that those that were seen as civil were twice as likely to be viewed as leaders, and they performed significantly better. People see you as an important -- and a powerful -- unique combination of two key characteristics: warm and competent, friendly and smart. In other words, being civil isn't just about motivating others. It's about you. If you're civil, you're more likely to be seen as a leader. You'll perform better, and you're seen as warm and competent.

What do people want most from their leaders? Data from 20,000 employees around the world indicate, employees want respect. Being treated with respect was more important than recognition and appreciation, useful feedback, and even opportunities for learning. Those that felt respected were healthier, more focused, more likely to stay with their organization, and far more engaged.

Civility lifts people. We'll get people to give more and function at their best if we're civil. Incivility chips away at people and their performance. It robs people of their potential, even if they're just working around it. When we have more civil environments, we're more productive, creative, helpful, and healthy.





# How Much Data Goes to Waste?



## Data Scientists Can't Keep Up With Data Creation

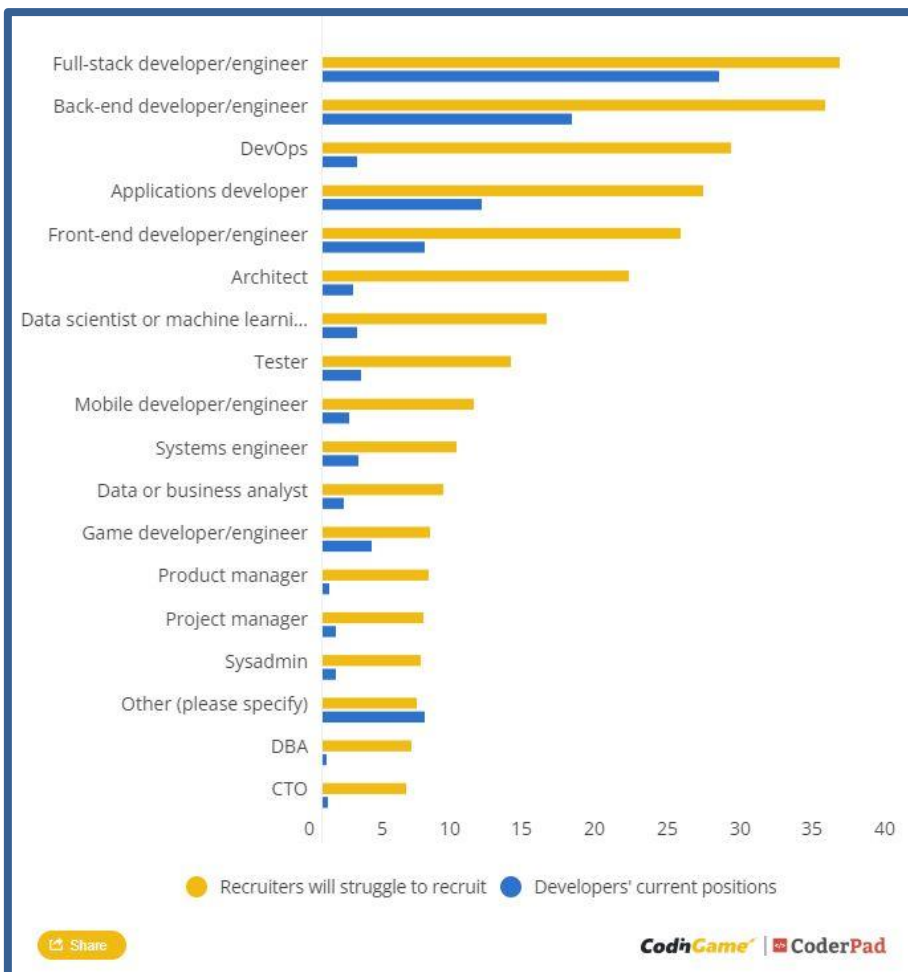
As referenced earlier, data creation is growing, but a smaller percentage of data is retained each year. This has led to lower than expected growth in physical storage sales. Is data becoming less valuable as it becomes more abundant? We would expect corporations to want to maximize the value of their data by mining as much as is profitable. Or is there too much data to be processed by humans - by data scientists to be specific?

It is likely that there is a lot of unrealized value in data that is discarded today. One popular historical analogy for data is that it is similar to oil. Oil was first refined into lighting oil in the 1800's, then into lighter fuel oils to power cars, ships and airplanes as the internal combustion engine proved its superiority to coal. It was separated into its constituent parts via thermal cracking in the early 1900's, where oil is heated in a furnace and then separated by fractional distillation. Lighter fractions have lower boiling points (propane, gasoline), diesel fuel is in the middle, and heavier hydrocarbons can be used for non-fuel applications (such as asphalt or lubricating oil). The creation of the internal combustion engine created a strong demand for gasoline, and a shortage of gasoline soon developed in the 1920's. Yet later by WWII, United States refineries were using catalytic cracking to convert these heavier hydrocarbons into more valuable, lighter gasoline. In fact, WWII historians have noted how important the American Houdry catalytic conversion refineries were to the Allied victory, supplying American and British Spitfire and Mustang fighter aircraft with high-octane (100) fuel to power their more efficient [high-compression ratio engines](#):

*That (Houdry) process would make a crucial difference in mid-1940, when the Royal Air Force started filling its Spitfires and Hurricanes with 100-octane gasoline imported from the United States instead of the 87 octane it had formerly used. Luftwaffe pilots couldn't believe they were facing the same planes they had fought successfully over France a few months before. The planes were the same, but the fuel wasn't. In his 1943 book [The Amazing Petroleum Industry](#), V. A. Kalichevsky of the Socony-Vacuum Oil Company explained what high-octane gasoline meant to Britain: "It is an established fact that a difference of only 13 points in octane number made possible the defeat of the Luftwaffe by the R.A.F. in the fall of 1940. This difference, slight as it seems, is sufficient to give a plane the vital 'edge' in altitude, rate of climb and maneuverability that spells the difference between defeat and victory.*

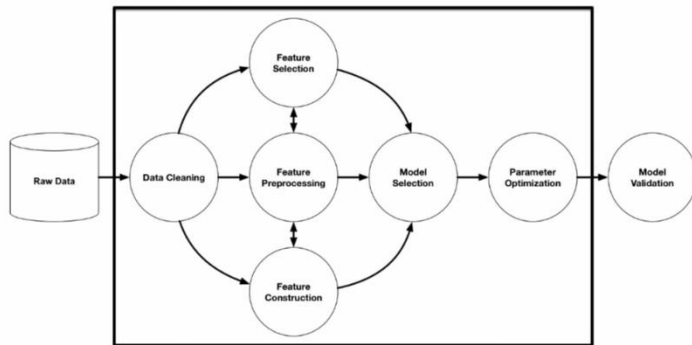
Today's data science 'refineries' (if you want to call them that) are comparable to 1920's thermal distilleries. They do a good job of separating crude oil into its constituent parts, but do little to turn lower value data into higher value data. They can identify valuable data, the 'cream of the crop' if you will, but throw out everything else. A large part of the problem is a lack of *talented* data scientists, who have the imagination and technical skill to reuse old data or repurpose otherwise discarded data. Just as big of a problem however, is a [shortage of data scientists in general](#) in comparison to available jobs.

Specifically, there is a shortage of data scientists [who can apply practical applications to their data sets](#) - data scientists who are nearly as skilled in software engineering as they are in data modeling. **Without enough data scientists, companies must focus their limited data science manpower on the most profitable ROI data - throwing out other data that (would) produce a return on investment were it refined.**



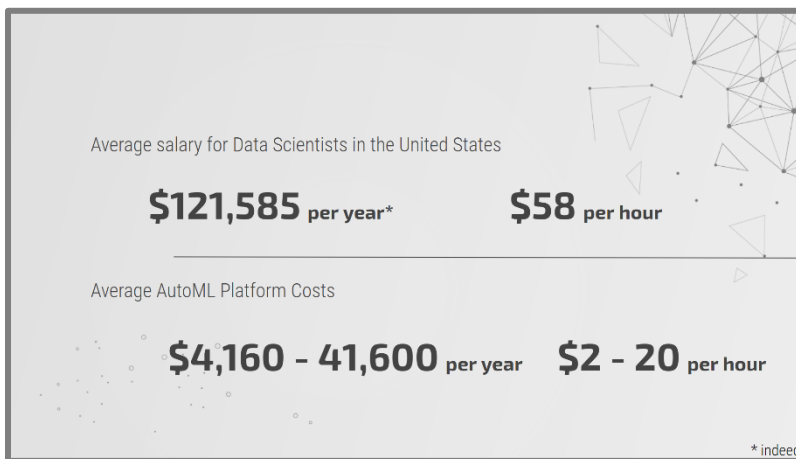
Employment of data scientists is projected to [grow 36 percent from 2021 to 2031](#), much faster than the average for all occupations. However, this impressive looking job growth rate represents only a 3.12% compounded annual growth rate (CAGR). That's impressive when compared to other jobs and their growth rates in the economy, but lacking when compared to the predicted 23% CAGR for data creation through 2025 ([IDC Global DataSphere and StorageSphere Forecasts](#)). To put it bluntly, humans will never be able to fill this data processing gap without help from their digital automation friends.

## A Better Data Refinery



### Automation in Data Science Will Increase the Value of Data

Data science is a discipline that is rooted in computer science and statistics. The life cycle of any data science effort is to collect and cleanse the data, visualize the data with graphs and charts, build a model from the data, and monitor and maintain the data models. Different steps in the [data science life cycle](#) are more/less automatable, and the methods used to automate them can vary.



Automated machine learning (AutoML) can automate the repetitive and time consuming task of cleaning data. This process involves combing through the data to look for errors or duplicates and changing the data's formatting. Through machine learning, parsing and other processes can easily be automated by AutoML.

Data visualization [can be automated](#). However, this is likely to be more of an assistant tool rather than something that is fully automated. Humans ultimately have to make decisions about data and what it means in a big picture sense. High level cognitive thinking is not automatable using AutoML, so ultimately while AutoML may suggest a data visualization or two that (it) thinks fits the data set, it is imperative that the data scientist dives into the data in order to find connections and lessons that an AutoML program may not be able to find or see.

The modeling of the data is a task which is very well suited for AutoML. Modeling data sets is all about tuning the parameters to find the model that fits the best. This is something that AutoML can do as well or better than a human. Monitoring and maintaining models is a task that is continuous in nature. Robotic process automation (RPA) bots can fix routine problems and service models as needed. Automating the routine tasks allow humans to have more free time to fix critical and/or novel problems as they occur.

AutoML and RPA will not replace data scientists any time soon - but they will allow data scientists to work on more projects and analyze more data sets than they currently do today. This will hopefully allow them to scale data science in step with the rapidly increasing rate of data creation. It's interesting to consider the ways in which storage is sold today (physical, cloud) and what the future holds for storage companies.

Data processing through AutoML and RPA will play a large role in determining how much data a company's data science department can process - ultimately determining the amount of data that a given company stores, and how much storage they will consume (physical or virtual). As data becomes more and more interwoven with these AI tools, look for storage to be packaged more and more with AI tools. Azure and Google Cloud conveniently already offer AutoML capabilities for consumers (read here for a [side-by-side comparison](#) of the two platforms).

## Data Growth Factors Internet of Things & Social Media



As mentioned earlier, data is predicted to grow at a [23% CAGR from now until 2025](#). Internet of Things (IoT) and Social Media are the two biggest growth factors contributing to this data expansion.

Competition for the connected vehicle space has become crowded as [Apple](#) and [Google](#) are becoming involved in vehicle programming, alongside both established car companies and the myriad of electric automotive startup companies. These companies view the car as a smartphone on wheels, and are eager to gain a piece of the pie.





Social Media is at a crossroads. Facebook (Meta) [has stopped growing](#) at 2.9B users. Platforms such as Instagram, Snapchat and TikTok are growth drivers. A lot of noise has been made in the media and in documentaries exposing some of the more [unsavory elements](#) of social media, such as [body dysmorphia, cyberbullying, and unrealistic expectations](#).

Yet despite all of this, social media is growing and connecting people from all around the world in ways which were not possible before now. Perhaps social media companies will be able to tweak their algorithms, and/or change the way that they interact with users to make the platforms healthier for everyone. How will governments react to this expansion of data? Will they try to harness it for state surveillance purposes? This possibility is not necessarily limited to countries like China, Russia, and Vietnam who already have tight government surveillance systems in place. The NSA has been exposed for hiding surveillance software in the [firmware of hard drives](#) in the past. What's to stop government agencies from embedding software into IOT devices (or cell phones for that matter)?

Ultimately, the wielding of such surveillance power is just as important as the surveillance capabilities that government agencies possess. Orwellian capabilities only manifest into Orwellian dystopia when governments leverage technology for evil.

Industrial IOT will ensure that [factories run efficiently](#) and downtime for maintenance or repairs is minimized. [Wearable IOT](#) is a popular consumer market that adds value to people's lives by providing them with information about their activities, health, and habits. [Farming IOT](#) will allow for more efficiency in watering, pest management, surveillance, and adaptive shading. [Traffic IOT](#) will allow for smoother commutes and less queuing at lights. [Power Grid IOT](#) will find energy efficiencies in the transmission of electricity and will preemptively prevent blackouts.

*"It's projected that we are going to have one trillion sensors in the world by 2025. That is one thousand billion sensors."* - [Mike Hayes](#)





## **G2M Research Multi-Vendor Webinar Series**

Our webinar schedule is below. Registration links and more information will be available in our next newsletter, on our website, and you can always contact us directly with questions. We are offering a Cybersecurity series and an Enterprise Storage & Technology multivendor series.

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

### **Enterprise Storage & Technology**

<a href="#">OCP 2022 Wrap Up – The Latest and Greatest in SSDs, CXL, Accelerators, and Other Big Trends for the Datacenter and the Cloud</a>	November 15
<a href="#">Storage Architectures for Artificial Intelligence &amp; Machine Learning</a>	February 7
<a href="#">Memory As The New Storage – CXL, Extended Memory, &amp; Persistent Memory. What Does the Future Hold?</a>	March 7
<a href="#">The Need for Speed: NVMe &amp; Advanced SSDs</a>	April 4
<a href="#">Software-Defined Flash Memory Architectures</a>	May 9
<a href="#">Storage &amp; Compute Architectures for Healthcare &amp; Imaging Applications</a>	June 27
<a href="#">NVMe &amp; NVMe-oF – Past, Present, &amp; Future (at FMS)</a>	August 2
<a href="#">GPUs, SSDs, &amp; Shared Memory: Accelerating Computing?</a>	August 22
<a href="#">Securing Data – How Storage &amp; Cybersecurity Technologies Can Work Together</a>	Sept 26
<a href="#">The Open Compute Platform (OCP) Movement – Providing Compute-At-Scale Value to On-Premises Deployments</a>	October 24
<a href="#">Storage Architectures for HPC Clusters</a>	November 21
<a href="#">2024 Trends – Cloud, On-Premises, &amp; Hybrid Compute/Storage</a>	December 12

## **Cybersecurity**

<a href="#"><u>Bug Bounties Gone Bad? Uber Case Highlights Pressure on CISOs.</u></a>	December 14
<a href="#"><u>Key Cybersecurity Trends for 2023</u></a>	January 12
<a href="#"><u>Cybersecurity for Remote Workers &amp; Mobile Devices</u></a>	February 23
<a href="#"><u>The Increasing Complexity of Cybersecurity Regulatory &amp; Compliance for the Financial Services Industry</u></a>	March 23
<a href="#"><u>Beyond the CISO Organization – Meeting the Cybersecurity Needs of the C-Suite &amp; Boardroom</u></a>	May 4
<a href="#"><u>Cybersecurity- Finding, Training, &amp; Retaining the Best Talent</u></a>	May 25
<a href="#"><u>xDR- The Promise versus the Reality</u></a>	June 15
<a href="#"><u>HIPAA, GDPR, Data Privacy, &amp; Cybersecurity- 5 Keys to Make It All Work Together</u></a>	July 13
<a href="#"><u>Beyond Ratings – 5 Things You Can Do With a Third Party Risk Management (TPRM) Program</u></a>	August 17
<a href="#"><u>10 Features of an Effective Attack Surface Management Tool</u></a>	September 7
<a href="#"><u>How Secure is the Cloud for Your Workloads?</u></a>	October 12
<a href="#"><u>Do You Need a SIEM? Use Cases Where a SIEM Makes Sense.</u></a>	November 9
<a href="#"><u>Cybersecurity Predictions for 2024</u></a>	December 7



## Upcoming Conferences

November 7-9	<a href="#">Acronis #Cyberfit Summit 2022</a> , Miami, FL
November 7-10	<a href="#">VMWare Explore Europe</a> , Barcelona
November 9-11	<a href="#">IT Nation Connect</a> , Orlando, FL
November 13-18	<a href="#">SC22</a> , Dallas
November 14-16	<a href="#">Gartner IT Symposium/Xpo India</a> , Kochi, India
November 14-17	<a href="#">Titanium Converge</a> , Austin, TX & Virtual
November 15-17	<a href="#">Black Hat Middle East &amp; Africa 2022</a> , Saudi Arabia
November 15-17	<a href="#">ISC East</a> , NYC
November 16	<a href="#">San Diego Cybersecurity Conference</a> , Hybrid
November 16	<a href="#">Threat Hunting Summit</a> , Virtual
November 18-19	<a href="#">Data Strategy &amp; Insights</a> (Forrester Research), Virtual
November 21-22	<a href="#">Gartner IT Infrastructure, Operations, &amp; Cloud</a> , London
November 28-Dec 2	<a href="#">AWS re:Invent</a> , Las Vegas
December 1-2	<a href="#">Digital Transformation Expo Global</a> , London
December 5-6	<a href="#">Healthcare Cybersecurity Forum</a> , Boston, MA
December 5-8	<a href="#">Black Hat Europe 2022</a> , London



December 6	<a href="#">Security Operations Summit</a> , Virtual
December 6-8	<a href="#">Gartner IT Infrastructure, Operations &amp; Cloud</a> , Las Vegas
December 6-9	<a href="#">Cisco Live</a> , Melbourne, Australia
December 10-14	<a href="#">Edge 2022: International Conf on Edge Computing</a> , Hawaii
December 10-14	<a href="#">Cloud 2022: International Conf Cloud Computing</a> , Hawaii
December 12-15	<a href="#">Palo Alto Networks Ignite</a> , Las Vegas
December 13	<a href="#">Black Hat Cybersecurity Outlook 2023</a> , Virtual
<b>2023</b>	
January 5-8	<a href="#">CES</a> , Las Vegas & Virtual
January 18	<a href="#">SNIA Persistent Memory Summit</a> , San Jose, CA
January 30-Feb 1	<a href="#">Cybertech Global TLV</a> , Tel Aviv, Israel
February 6-10	<a href="#">Cisco Live</a> , Amsterdam, Netherlands
February 13-14	<a href="#">Gartner Security &amp; Risk Management</a> , Mumbai, India
February 14-16	<a href="#">ESNA Expo</a> , Long Beach, CA
February 14-17	<a href="#">ITExpo East</a> , Fort Lauderdale, FL
February 27-28	<a href="#">Gartner Security &amp; Risk Management Summit</a> , Dubai
February 27-March 2	<a href="#">Mobile World Congress Barcelona</a>
February 28-March 2	<a href="#">Rice University Energy HPC Conference</a> , Houston, TX
March 8-9	<a href="#">CloudExpo Europe</a> , London
March 14-16	<a href="#">Gulf Information Security Expo</a> , Dubai, UAE
March 20-22	<a href="#">Gartner Data &amp; Analytics Summit</a> , Grapevine, TX
March 20-23	<a href="#">GTC CPU Technology Conference</a> , San Jose, CA
March 28-29	<a href="#">Gartner Security &amp; Risk Management</a> , Sydney, Australia
March 28-31	<a href="#">ISC West</a> , Las Vegas
April 5-7	<a href="#">IST Information Security Expo</a> , Tokyo, Japan
April 15-19	<a href="#">NABShow</a> , Las Vegas
April 17-21	<a href="#">HIMMS Global Health Conference</a> , Chicago, IL
April 19-20	<a href="#">CyberSec Europe</a> , Brussels, Belgium

April 24-27	<a href="#">RSA Conference</a> , San Francisco
May 22-25	<a href="#">Dell World</a> , Las Vegas
June 2-6	<a href="#">School Transportation Network Expo East</a> , Indianapolis, IN
June 4-8	<a href="#">Cisco Live</a> , Las Vegas
June 5-7	<a href="#">Gartner Security &amp; Risk Managemnt</a> , National Harbor, MD
June 7-9	<a href="#">Synnex Red, White and You</a> , Greenville, SC
June 14-16	<a href="#">Interop Tokyo</a> , Chiba, Japan
June 20-22	<a href="#">HPE Discover</a> , Las Vegas
June 20-22	<a href="#">Info Security Europe</a> , London
July 14-19	<a href="#">School Transportation Network Expo</a> , Reno, NV
August 1-3	<a href="#">Flash Memory Summit</a> , Santa Clara, CA
August 5-10	<a href="#">Black Hat USA</a> , Las Vegas
August 30-Sept 1	<a href="#">Security Expo</a> , Sydney, Australia
September 11-13	<a href="#">Gartner Security &amp; Risk Management</a> , London
September 11-13	<a href="#">Global Security Exchange</a> , Dallas, TX
September 18-20	<a href="#">Crowdstrike fal.con</a> , Las Vegas
October 2-4	<a href="#">DattoCon</a> , Miami, FL
October 3-4	<a href="#">CyberTech Europe</a> , Rome

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