

# Uptime Intelligence 2024 Research Reports



Douglas Donnellan 1 Jan 2025

As a quick reference, we have provided links below to all the research reports published by Uptime Intelligence in 2024, by month. Research areas focused on 1) power generation, distribution, energy storage; 2) data center management software; 3) sustainability, energy efficiency; 4) silicon and systems; 5) resiliency: outages, topology, climate risks; 6) cooling and heat rejection; 7) staffing and skills; 8) security and human risk

## January 2024

[Tools to improve power use by IT are underused](#)

[Tracking of IT equipment varies widely and often fall short](#)

[EU's EED: proposed reporting revisions](#)

[Five data center predictions for 2024](#)

[How server power management works](#)

[Colocation and public cloud growth masks enterprise expansion](#)

[Resiliency versus low PUE: regulators a catalyst for innovation](#)

[What does embedded carbon of IT really represent?](#)

[AI startups innovate in cooling and IT operations](#)

[Uptime's predictions 2022 to 2024 — relevant and actionable?](#)

[Air-assisted direct liquid cooling](#)

## February 2024

[Most operators plan to spend more on rising demand](#)

[Critical role for EU data center code of conduct](#)

[The role of AI in digital infrastructure management](#)

[Managing server performance for power: a missed opportunity](#)

[EU battery regulations: what do the new rules mean?](#)

[Long shifts in data centers — time to reconsider?](#)

[UK prepares resiliency, cybersecurity legislation for colocation](#)

## March 2024

[Annual outage analysis 2024](#)

[Ineffective cyber policies increase corporate risk](#)

[Data collection for IT metrics: is the industry ready?](#)

[Capacity expands rapidly, but complexity is challenging](#)

[Sustainability data exchange in colo and cloud contracts](#)

[Cloud outage insurance: assessing policy option](#)

[US mandates crypto energy reporting: will data centers be next?](#)

[Generative AI and global power consumption: high, but not that high](#)

[Confusion reigns over EED May 15 reporting deadline](#)

[EED delegated regulation is finally final](#)

## April 2024

[Sustainability strategies face greater pressure in 2024](#)

[Tutorial 1: Scoping data center cybersecurity](#)

[Equipment prices rise despite supply chain improvements](#)

[Increased requirements for Scope 3 reporting and energy certificates](#)

[Underwater data centers: lessons from the deep](#)

[Next-gen refrigerants: another environmental plight?](#)

[Time to collaborate on contracts for sustainability](#)

[OT protection — is air-gapping the answer?](#)

[The threat to data center security from state-sponsored hackers](#)

[Scope 3 accounting: once is not enough](#)

[Uncertain power demand figures will lead to poor decisions](#)

[DLC momentum rises, but operators remain cautious](#)

[Maturity model for sustainability downplays site-level resiliency](#)

## May 2024

[The impact of AI on data center operations \(Part I\)](#)

[Data center sustainability standards \(updated\)](#)

[Uptime Institute Cooling Systems Survey 2024: Direct liquid cooling](#)

[A deep dive into certificates for carbon-free energy](#)

[Capacity planning for liquid-cooled data centers](#)

[Operators are pushing net-zero targets beyond 2030](#)

[Anatomy of a thermal runaway](#)

[Why DC racks are still rarely used outside of hyperscalers](#)

[Is this air cooling's last gasp?](#)

[High-impact outages highlight ongoing resiliency challenges](#)

[iPDUs: a critical step for next generation efficiency](#)

[Complexity versus cybersecurity in the data center](#)

## June 2024

[The long journey to concrete and steel decarbonization](#)

[Tutorial 2: Identifying and addressing data center cybersecurity threats](#)

[Operators boost cybersecurity efforts, but more work is needed](#)

[Effective EOPs: how cognitive science can help](#)

[EED reporting deadlines are clarified](#)

[Ignore Li-ion fire risks at your peril](#)

[Mitigating OT risk from third-party requests](#)

[Air cooling's third win](#)

[DCIM past and present: what's changed?](#)

[Immersion fluids hold promise, but fire risk a concern](#)

[Targeted recruitment could widen the talent pool](#)

## July 2024

[Using optimization software for cooling and capacity gains](#)

[Uptime Institute Global Data Center Survey 2024](#)

[Tutorial 3: Effective data center governance for cybersecurity](#)

[Interest in two-phase cooling warms up](#)

[European legislation prompts greater environmental action](#)

[Six AI infrastructure conundrums](#)

[Europe taxes waste heat recovery: can data centers make it work?](#)

[Global IT disruption highlights concentration, third-party risk](#)

[Digital EOPs: the appliance of science](#)

[Water cold plates take a big lead in the small world of DLC](#)

## August 2024

[Tutorial 4: Roles and responsibilities in data center cybersecurity governance](#)

[Water is a local issue: site selection and facility design](#)

[Hydrogen in data centers: an introduction](#)

[Hardware for AI: what makes it different?](#)

[Sustainability teams: key players and crucial collaborations](#)

[Shaky start for Europe's EED legislation](#)

[Global IT outages raise the question: who bears responsibility?](#)

[Grid growth and decarbonization: an unhappy couple](#)

[Building trust: working with AI-based tools](#)

[Rack densification: is it really happening this time?](#)

[UPS component failures: what are the leading issues?](#)

[Nature laws to play key role in planning and building facilities](#)

## September 2024

[Tutorial 5: Risk management in data center cybersecurity](#)

[Considerations of raised supply air temperatures](#)

[Uptime Institute Global Data Center Survey 2024: supplier view](#)

[Data center management and control: an overview](#)

[Uptime Institute Global Data Center Survey 2024: regional view](#)

[Pulling IT power data with software](#)

[AI has a weight problem](#)

[EED reporting limps out of the gate](#)

[Will legislation change how finance uses public cloud?](#)

[Bridging the skills gap: lessons from China](#)

[Erratic power profiles of AI clusters: the root causes](#)

## October 2024

[Tutorial 6: Developing data center cybersecurity policies and procedures](#)

[Cooling systems: balancing cost, energy and water use](#)

[How generative AI learns and creates using GPUs](#)

[Why regulation on temperature can be counterproductive](#)

[Weak security processes can increase impact of failures](#)

[How much capacity is in aging data centers?](#)

[On-site natural gas: why some sites need it](#)

[Critical national infrastructure status: what does it mean?](#)

[Netherlands enforces efficiency mandates](#)

[Schneider acquisition signals liquid cooling to go mainstream](#)

[New quantum cloud region signals increased commercial focus](#)

[Should data centers sell their heat?](#)

[AI adoption in data centers: an insight into job displacement](#)

## November 2024

[Tutorial 7: Using frameworks to structure data center cybersecurity](#)

[Operators struggle to retain staff and fill vacant positions](#)

[Cyber incidents are common and often significant](#)

[Hydrogen fuel cells: a niche option for standby power](#)

[Why didn't data center operators notice the 2024 solar storms?](#)

[What is the outlook for GPU cloud providers?](#)

[Record investment masks a related trend: rising costs](#)

[Understanding AI deployment methods and locations](#)

[Hyperscale data center plans at unsustainable levels](#)

[Maximizing server efficiency is becoming more difficult](#)

[Extended reality offers new training capabilities](#)

[Why technology business management does more than FinOps](#)

[UN body's data center guidelines cause concern](#)

[AI: enterprises are active, but cautious](#)

[Why bigger is not better: gen AI models are shrinking](#)

[Immersion cooling evolves in response to IT power density](#)

## December 2024

[Tutorial 8: Addressing supply chain risk in data center cybersecurity](#)

[Most AI models will be trained in the cloud](#)

[How tagging provides better management of cloud costs](#)

[Data center management software: optimizing the IT](#)

[Nvidia's vision for data center may be a false prophecy](#)

[Why AWS's AI strategy is a sprint](#)

[Grid demand will require active participation from data centers](#)

[AI to trigger radical overhaul of data center electrification](#)

[Data center resource use will raise deep questions, and opposition](#)

### ABOUT THE AUTHOR

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#### Douglas Donnellan

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Douglas is a Research Analyst at Uptime Institute covering sustainability in data centers. His background includes environmental research and communications, with a strong focus on education.

[\*\*ddonnellan@uptimeinstitute.com\*\*](mailto:ddonnellan@uptimeinstitute.com)

## **About Uptime Institute**

Uptime Institute is the Global Digital Infrastructure Authority. With over 4,000 awards issued in over 122 countries around the globe, and over 1,100 currently active projects in 80+ countries, Uptime has helped tens of thousands of companies optimize critical IT assets while managing costs, resources, and efficiency. For over 30 years, the company has established industry-leading benchmarks for data center performance, resilience, sustainability, and efficiency, which provide customers assurance that their digital infrastructure can perform across a wide array of operating conditions at a level consistent with their individual business needs. Uptime's Tier Standard is the IT industry's most trusted and adopted global standard for the design, construction, and operation of data centers.

Offerings include the organization's Tier Standard and Certifications, Management & Operations reviews and assessments including SCIRA-FSI financial sector risk assessment, the Sustainability Assessment, and a broad range of additional risk management, performance, availability, and related offerings. Uptime Education training programs have been successfully completed by over 100,000 data center professionals, such as the much-valued ATD (Accredited Tier Designer) and AOS (Accredited Operations Specialist). The Uptime Education curriculum has been expanded by the acquisition of CNet Training Ltd. In 2023.

Uptime Institute is headquartered in New York, NY, with offices in London, Sao Paulo, Dubai, Riyadh, and Singapore, and full-time Uptime professionals based in over thirty-four countries around the world.

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