

Uptime Intelligence Research Agenda



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1 Jan 2025

The Uptime Intelligence research agenda includes a list all published and planned reports from January 2024 to March 2025, and is focused on Uptime Intelligence primary coverage areas: 1) power generation, distribution, energy storage; 2) data center management software (automation, AI); 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](#)

January 2025

[Five data center predictions for 2025](#)

[Enterprise and colocation operators face rising costs in 2025](#)

The hydrogen economy (part 3)

[Are data centers on top of NIS 2 cyber compliance?](#)

[Labor shortages put some large campuses at risk of outages](#)

[Sweat dedicated GPU clusters to beat cloud on cost](#)

[AI embraces liquid cooling, but enterprise IT is slow to follow](#)

[Uptime's predictions for 2025: an overview](#)

[UNEP specs for IT equipment efficiency: more work required](#)

[How AWS's own silicon and software deliver cloud scalability](#)

IT efficiency: an untapped power resource

Data center management software: DCIM (part 3)

Neoclouds cheaper than hyperscalers for AI training

A primer on SMRs

CNI update: new status will bring regulations

February 2025

Resiliency v Sustainability Series: Engine generators and alternatives

Developing an effective water management strategy (part 3)

A sustainable data center in the AI era: Look behind the curtain for results

AI-ready data center designs (part one)

AI cooling: methods and capacities

Everything that burns: data centers consider all power options

Big build out stunted by delays and uncertainty

The incremental cost of bespoke AI might not add up to value

US GPU export policy will restrict AI data center building

Working with communities: the dos and don'ts of NIMBY prevention for data centers

New York legislation goes after data centers

A net zero data center is not a sustainable data center

The coming of quantum usefulness

DCM-C software: Facility Ops product guide

Data center and IT spending survey

Data center versus the people

Energy Management Systems: are you ready?

Public outages in 2024

Staff turnover: how it is affecting the industry and how to prevent it

March 2025

AI-ready data center designs (part two)

Internet resilience: what do data center operators need to know?

(Titles, dates and descriptions are subject to change. Further details and extra reports and updates will be added to further iterations of this sheet as needed and will be available closer to the date of publication.)

ABOUT THE AUTHOR



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

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About Uptime Institute

Uptime Institute is the Global Digital Infrastructure Authority. Its Tier Standard is the IT industry's most trusted and adopted global standard for the proper design, construction, and operation of data centers – the backbone of the digital economy. For over 25 years, the company has served as the standard for data center reliability, sustainability, and efficiency, providing customers assurance that their digital infrastructure can perform at a level that is consistent with their business needs across a wide array of operating conditions.

With its data center Tier Standard & Certifications, Management & Operations reviews, broad range of related risk and performance assessments, and accredited educational curriculum completed by over 10,000 data center professionals, Uptime Institute has helped thousands of companies, in over 100 countries to optimize critical IT assets while managing costs, resources, and efficiency.