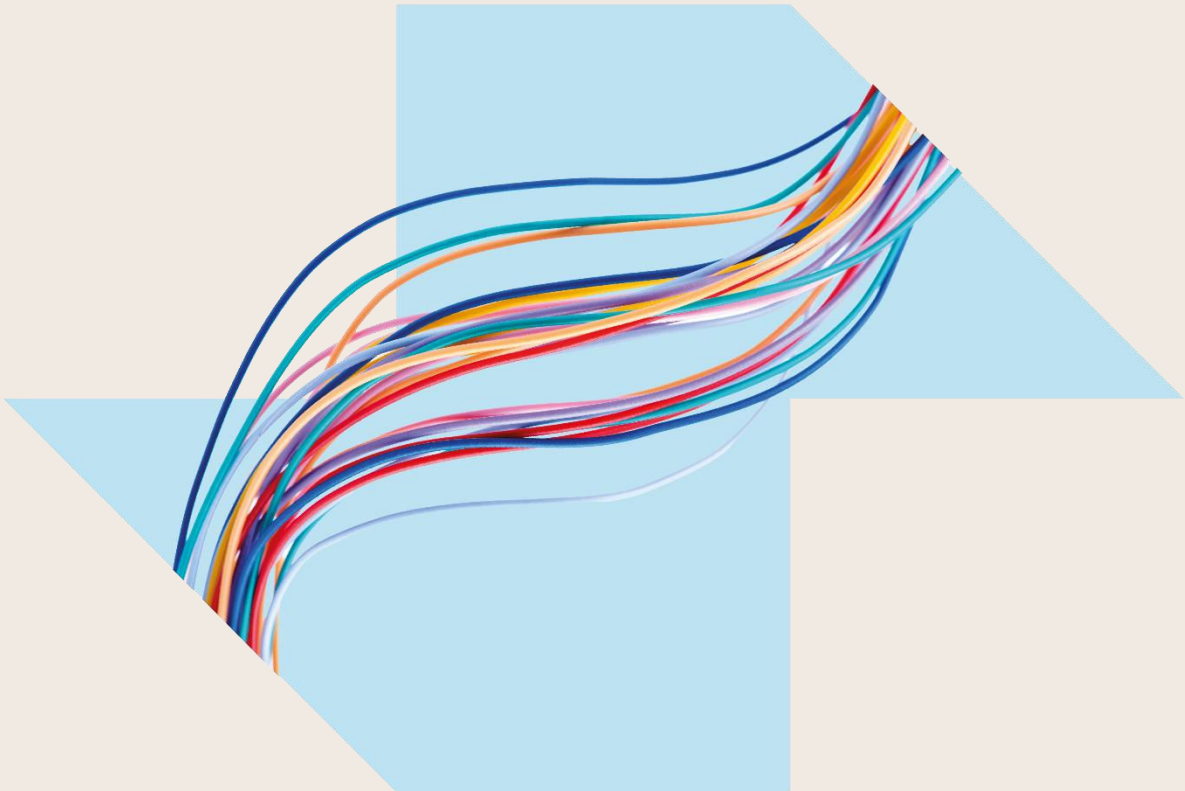
Forsters

Real Estate

# Data Centre glossary

A facility used to house computer systems and associated components, such as telecommunications and storage systems. It generally includes redundant or backup power supplies, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression) and security devices.



# Glossary

| Term | Definition |
|---|---|
| A | |
| AI Data Centre: | Typically developed by hyperscalers, this type of facility is optimised for AI workloads and relies heavily on high-performance graphics processing units and advanced central processing units to handle intensive computing demands. |
| Aisle: | The open space between rows of racks in a data centre. Best practices involve arranging racks with consistent front-to-back orientation to create 'cold' and 'hot' aisles, optimizing airflow and cooling efficiency. |
| Alternating Current (AC): | A type of electrical current where the flow of electric charge periodically reverses direction. |
| Amperage/Amp (A): | Way to measure the amount of electricity running through a circuit. Amperage is the "rate" that current is flowing through the circuit or the number of electrons moving through the wire. |
| Artificial Intelligence (AI): | The science of making machines that can think and act on their own, like humans. Companies can create autonomous data centres that can optimize and perform generic data engineering tasks without human intervention. |
| C | |
| Cabinet: | Device for holding IT equipment, also called a rack. |
| Cage: | An enclosure to subdivide colocation space within a data centre. Most data centre cages provide full visibility to what is inside. |
| Cloud Computing: | A general term for anything that involves delivering hosted services over the internet. These services are broadly divided into three categories: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). |
| Cloud data centres: | Specifically operated by cloud service providers (AWS, Microsoft, Google), to offer services over the internet. No actual space / infrastructure rented. |
| Colocation data centres: | Data space where customers rent space and infrastructure (by the MW). Provider offers power, cooling, bandwidth and physical security. |
| Concurrently Maintainable: | A design standard that provides a data centre with the ability to perform planned and unplanned emergency maintenance without disrupting the computer hardware operation. |
| Climate Neutral Data Centre Pact: | A self-regulatory initiative by European data centre operators and trade associations to make data centres climate neutral by 2030. |

| Term | Definition |
|---|---|
| **Critical National Infrastructure (CNI):** | CNI includes sectors such as energy, water, transportation, healthcare, telecommunications, and finance. These infrastructures are vital for national security, public safety, and economic stability. Disruption or destruction of CNI- whether through natural disasters, cyberattacks, or other threats- can have severe consequences for a country's wellbeing and resilience. |
| D | |
| **Data Centre Infrastructure Efficiency (DCIE):** | A measure of data centre efficiency calculated by dividing the power consumption of IT equipment by the total power consumption of the entire data centre, and is expressed as a percentage. It is the inverse of Power Usage Effectiveness (PUE), reflecting how effectively a data centre uses energy specifically for IT operations relative to overall energy use. |
| **Data Hall:** | The secure area of the data centre housing technical infrastructure. These areas are typically filled with server cabinets and a cooling system (many use the term "data centre" when referring to a data hall). |
| **Data Sovereignty:** | The concept that digital data is subject to the laws and governance structures of the country where it is collected, stored, or processed. |
| **Direct Current (DC):** | A non-time varying method of delivering power. While slightly more efficient then AC if utilised between the DC portion of the UPS and the power supplies in IT equipment, it has not won wide acceptance in modern data centres. |
| **Dirty Power:** | An abnormality in the power quality being delivered to a system. These abnormalities can include low power factor, voltage variations, frequency variations, surges and sags. |
| **Downtime:** | A period of time, or a percentage of a time span, that a system is unavailable or offline. This is usually a result of the system failing to function because of an unplanned event, or because of routine maintenance. |
| **Dry Cooling:** | Dry cooling works by circulating a fluid from an area where heat builds up, such as a data centre server room, into a device where it is exposed to outside air. The cooled fluid is then pumped back into the heat collection site, and the process is repeated. |
| E | |
| **Evaporative Cooling:** | A method of cooling whereby water is used to cool the air inside the data centre. To do so, the water is evaporated into the air to lower the temperature. Large fans are employed inside a data centre to draw warm air into them. |
| **Edge Data Centre:** | Smaller data centre facilities located close to the populations they serve that deliver cloud computing resources and cached content to end users. They typically connect to a larger central data centre or multiple data centres. |

| Term | Definition |
|---|---|
| **Energy:** | Measurement of the ability of something to do work, and it can be stored and measured in many forms. |
| **Energy Efficiency Act (EU Directive for Data Centres):** | A legislative framework aimed at reducing energy consumption and improving efficiency across sectors, with specific mandates for data centres in the EU. |
| **Enterprise Data Centre:** | A fully company-owned data centre used to process internal data and host mission-critical applications. |
| F | |
| **FLAPD:** | Frankfurt London Amsterdam Paris Dublin- these cities are recognised as the primary hubs for data centre activity. Due to power constraints secondary markets are becoming more popular. |
| G | |
| **Grey Belt:** | Land in the green belt comprising previously developed land and/or any other land that does not strongly contribute to any of the purposes in (a) (Preventing urban sprawl), (b) (Preventing neighbouring towns from merging) or (d) (Preserving historic town settings) in paragraph 143, of the NPPF- while excluding environmentally or heritage-sensitive areas. |
| H | |
| **Hot Aisle/Cold Aisle:** | An organised layout in which parallel aisles of equipment enclosures are arranged with rack fronts always facing rack fronts and rack rears always facing rack rears. This ensures separation between cooling air in the "cold" aisle entering the front of the racks and warm exhaust air leaving the back of the racks in the "hot" aisle. Separation of cooling air and exhaust air results in higher cooling system efficiencies and the ability to cool higher power densities in the computing environment. |
| **Hyperscale Data Centre:** | A facility which houses critical compute and network infrastructure that provides scalability and high-speed processing for large volumes of data. These allow big companies like Amazon, Google, and Microsoft to deliver key services to customers worldwide. |
| I | |
| **Internet of Things (IoT):** | A network of physical devices embedded with sensors, software, and connectivity that enables them to collect and exchange data. It allows real-time monitoring, automation, and smarter decision-making across various industries (such as healthcare). |
| **IP Address:** | A unique string of numbers separated by periods that identifies each computer using the Internet Protocol to communicate over a network. |

| Term | Definition |
|---|---|
| **Immersive cooling:** | A thermal management technique where electronic components, such as servers, are fully submerged in a non-conductive liquid to dissipate heat. |
| L | |
| **Liquid Cooling:** | A broad term for any cooling method that uses a liquid (usually water or a dielectric fluid) to absorb and transfer heat away from components. It often involves cold plates, tubing, and pumps to circulate the liquid. |
| N | |
| **Nationally Significant Infrastructure Projects (NSIP):** | Data centres are not NSIPs, however the process has begun for the preparation of draft regulations to include data centres as business and commercial projects eligible to be considered as NSIPs for the purpose of the NSIPs consenting scheme. |
| O | |
| **Ohms (O):** | Measures how much a material or component resists the flow of electric current- one ohm equals the resistance that allows one ampere of current to flow when one volt of potential difference is applied |
| P | |
| **Power:** | Electric power is defined as the rate at which electrical energy is transferred by an electric circuit. |
| **Power Distribution Unit (PDU):** | PDU typically refers to either the transformer/breaker panel that is used between a UPS supplying voltage higher than that used by the IT equipment and the cabinets or the smaller rack based “power strip” device that is used inside the rack to distribute power to the IT equipment. |
| **Power Usage Effectiveness (PUE):** | PUE measures the efficiency of power usage in a data centre. Within a typical data centre, power will be used to run the computer equipment as well as for cooling, lighting and other functions. |
| R | |
| **Rack:** | See Cabinet. |
| **Raised Floor:** | A system of pedestals, stringers, and floor tiles that create an elevated floor environment. The under-floor is accessible and can be used as a distribution path for air conditioning, HVAC piping, data, and electrical systems. |
| **Redundancy Levels (N+1, N+2, 2N):** | Redundancy levels are defined relative to the baseline “N,” representing the minimum number of independent resources required for system operation. In an N+1 configuration, there is one additional backup resource; N+2 includes two backup resources; and 2N provides double the total resources available to the system. |

| Term | Definition |
|---|---|
| S | |
| **Server Room:** | A location specifically designed to house a high concentration of information technology equipment. |
| **Service Level Agreements (SLAs):** | Formal contracts between the data centre provider and clients that specify the expected standards for service delivery, including parameters such as uptime guarantees, response times for issue resolution, and maximum allowable downtime, ensuring clear expectations and accountability for performance and reliability. |
| **Small Modular Reactors (SMRs):** | Compact nuclear reactors designed to be built in factories and deployed in modules, offering flexible and scalable energy solutions. |
| **Sovereign AI:** | AI that a country can develop and run on its own terms (local control of data, models and infrastructure). |
| **Standby Generator:** | The main component in a back-up electrical system that operates automatically. In an outage, the generator supplies power to the power distribution system. Most units run on diesel or natural gas. |
| T | |
| **Tier I:** | A Tier I data centre is a basic server room implementing the general guidelines for computer system installations. This first level runs within a 99.671 percent availability through one non-redundant distribution path with non-redundant capacity components. |
| **Tier II:** | A Tier II data centre includes all requirements of Tier 1, plus a guarantee of 99.741 percent availability with redundant site infrastructure capacity components. |
| **Tier III:** | In addition to fulfilling requirements of Tiers I and II, Tier III data centres provide dual-powered IT equipment to receive data from multiple independent distribution paths with an increased availability of 99.982 percent guaranteed. |
| **Tier IV:** | Tier IV data centres include the components of the first three tiers with the addition of independently dual-powered cooling equipment. The site infrastructure is fault-tolerant with distribution capability and the capacity to store electrical power. An availability of 99.995 percent is guaranteed.<br>*The tiers were created by the Uptime Institute – a globally renowned, vendor-neutral standard for evaluating the reliability and performance of data centre infrastructure).* |

| Term | Definition |
|---|---|
| U | |
| **Uninterruptible Power Supply (UPS):** | A device that provides backup power to equipment when the main power source fails or fluctuates. It ensures continuous operation by supplying energy from batteries for a short duration, protecting against outages, voltage drops, and power surges until the back-up generators can supply power. |
| V | |
| **Volt (V):** | A unit of electrical potential / "pressure" / speed at which electricity flows through a system. |
| **Volt-Amp (VA):** | A unit of apparent power. In AC circuits, the magnitude of the voltage across a circuit x the current through the circuit = apparent power. |
| W | |
| **Watt (W):** | A unit of power (the amount of power an electric device consumes), commonly used in electrical discussion. Watts are the product of potential (volts, see V) and current (amps, see A).<br>◤ Kilowatt (kW): 1,000 watts, often used for appliances and power generation.<br>◤ Megawatt (MW): 1,000,000 watts, commonly used for large-scale power plants.<br>◤ Gigawatt (GW): 1,000,000,000 watts, relevant for large energy projects or national grids.<br>◤ Milliwatt (mW): 0.001 watts, typically used for small electronic devices. |
| **Water usage effectiveness (WUE):** | Measure of the water used on-site for data centre operations including humidification and on-site evaporation for cooling or energy production. WUE is calculated by dividing “annual water usage” by the “energy consumption of the IT computing equipment”. The units of WUE are litres/kilowatt-hour (L/kWh) |