



FULFILLING ALL REQUIREMENTS

Complete solutions for electrical and ICT infrastructures
in your data centre

THE NERVE CENTRE OF YOUR COMPANY



The data centre is the nerve centre of a company. Your business-critical data, applications and systems must be available at all times so that your business processes run smoothly. At the same time, your data centre should be as easy as possible to manage, allow expansion and modernisation when required and be energy-efficient in operation.



SECURITY ZONE

You can only meet these requirements with a carefully planned and sophisticated infrastructure. To ensure an uninterrupted and at the same time cost-efficient operation in the long-term, **established know-how** is required in the different areas and disciplines such as cooling, power supply, monitoring and communications – from the initial planning phase, during the installation and commissioning, through to any changes and enhancements which may be carried out later. In the process, the individual disciplines must never be considered in isolation. They always need to be seen as an integral whole.

In addition, every data centre has its own **unique structure**. A specific solution must be found for every environment with its individual requirements, and of course this must be according to the current standards.

Not least during the planning, **all the cost-benefit factors** must be constantly weighed up against each other. For example, the highest possible uptime of 99.995% fault-tolerant site infrastructure

with electrical power storage and distribution facilities which corresponds to tier IV of the ANSI/TIA-942 standard can only be achieved with considerable capital investment. One of the reasons for this is that a drop in system utilisation, with an increase in tier level, is accompanied on the other hand by higher operating costs for power and maintenance. A possible alternative to this would be two separately located data centres, both of which comply with tier II, but also can achieve an overall availability of 99.995%.

These aspects make it clear: for such complex matters as planning, installation or modernisation of your data centre infrastructure, you need **a professional partner**. With years of experience and many successful client data centres deployed across the world, Datwyler is perfectly placed to fill this role.

YOUR PROFESSIONAL PARTNER



Datwyler Cabling Solutions is a leading provider of high-quality complete solutions for electrical and ICT infrastructures in public and commercial buildings and data centres as well as for FTTx networks. Our well-established company, which will shortly celebrate its centenary, successfully operates in the global market as a reliable supplier of innovative products and system solutions and – in close cooperation with experienced partners – also as subcontractor or main contractor, covering the whole supply chain: from preliminary studies, through project planning and implementation, to documentation and support of the infrastructures provided.



Datwyler offers you **coordinated, efficient product solutions** for the successful planning and implementation of your data centre project – all tailored to your specific requirements. These include cooling and air-conditioning, power supply and emergency power supply, fire protection, monitoring, video surveillance and access control, communication, IT racks, rack containment and interior fittings as well as planning and documentation.

We achieve the necessary high availability and fail-safe operation by redundant design of all essential systems. The quality, stability and conformance to standards of the solutions introduced by us ensure **future security, reduced operating expenditure and protection of investment**. With regard to moves, adds and changes, plus future technology migration, we work with modular and flexible systems as well as with pre-packaged or pre-assembled high-performance plug-and-play solutions that are simple to update and cause less disruption.

Our product solutions are complemented by **professional services** which correspond to the typical project process – from the required preliminary site surveys and studies through to operation.

You can use these services individually, but also in combination, as required.

During the implementation of data centre projects – depending on the project definition – we make use of our own resources as well as expert knowledge from our actively-managed **network of partners**. In particular, our technology and installation partners make it possible for us to implement a comprehensive high-quality complete solution for your data centre.

When selecting partners for projects, **we first discuss the options with you**, our client. You may wish to use a contractor that you already know, as it is helpful if the partner is familiar with the site or existing data centre infrastructure. If you don't have a preference, we will be happy to recommend a suitable company. In either case it is important for us that the corresponding firms or individuals employed for carrying out the project are trained and certificated by us, to ensure a high standard of quality.

PRECISION SOLUTIONS FOR COOLING AND AIR CONDITIONING



Cooling systems conduct waste heat away from the data centre and ensure that the IT systems run at an optimum operating temperature. As a rule, they consist of air-conditioning units in the computer rooms and the sub-systems, which are required for their operation; for example refrigerating machines, re-cooling towers, condensers, pumps, pipelines, distribution networks as well as components of the regulation and control circuits down to the rack level.

The cooling and air conditioning systems in modern data centres must be redundantly designed to meet the requirements of highly available systems. Because cooling can take up to 50% of the total energy consumption in data centres, we place particular value on **energy-efficient cooling concepts**.

Our cooling solutions are precisely designed to meet these requirements and are based on innovative technologies, offering you the highest efficiency and power with minimum long-term operating costs. With our complete solutions, you have available a **comprehensive cooling portfolio** for the specific requirements of IT platforms in your business-critical server rooms and data centre sites – from limited requirements through to those of high-performance platforms.

We use only reliable **precision equipment** for the computer room air conditioning (CRAC): closed control units

(CCUs) as well as open row coolers and closed side coolers which ensure cooling power according to demand and precise cold air guidance.

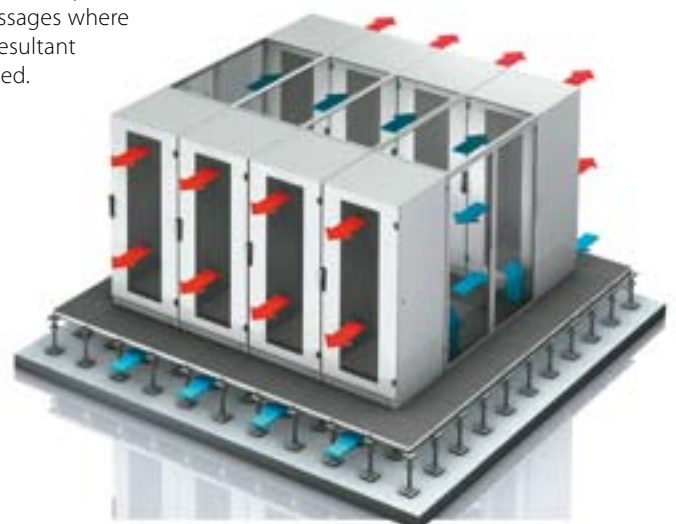
Among the features of our **CCUs** are their high reliability and their customer and project specific design as regards the necessary technology, power, redundancy and expandability.

Our portfolio of the **open row coolers and closed side coolers** includes solutions with many different redundancy and power options, depending on whether they are used in open rack rows in which targeted individual high-density zones or racks must be supplied with higher cooling power, or whether they are incorporated in cold air or warm air passages where mixing of the airflows and resultant cooling losses must be avoided.

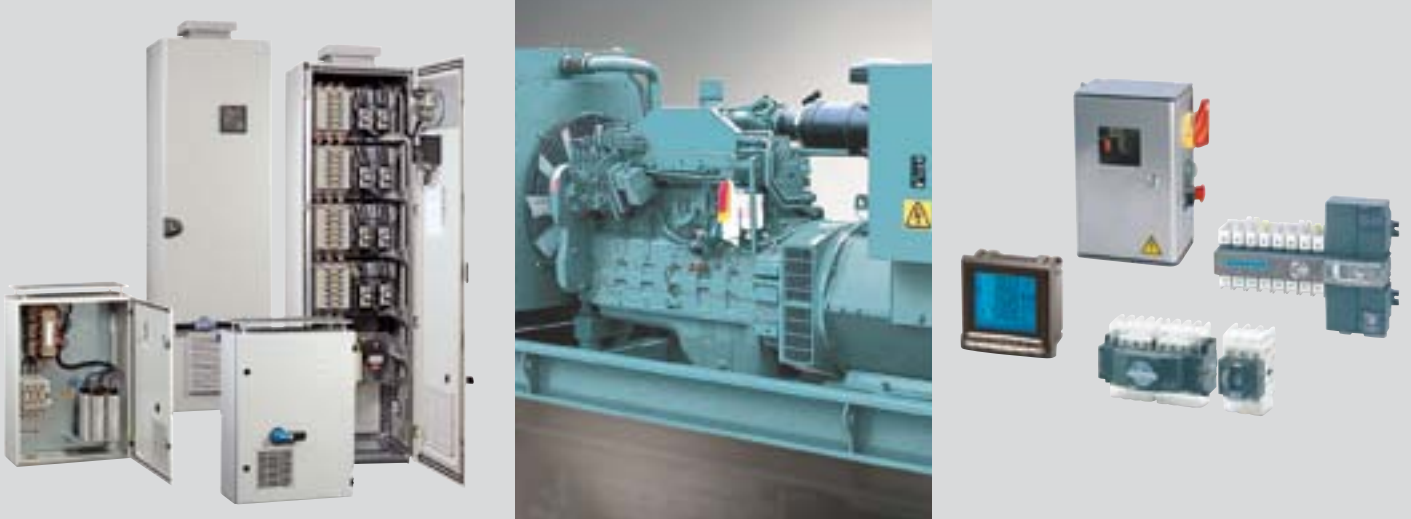
Energy savings and lower cooling costs by managing air flows with the cold/hot aisle containment.

In addition there are complete solutions for energy-efficient **cold and/or hot aisle containment** as well as built-in raised floor cooling panels and innovative floor panel technologies for an intelligent regulation of cold air.

Each of our precision solutions integrates seamlessly into the cooling concept chosen by you, whether it is free, geothermic or solar cooling, with or without raised floor, and with chilled water (CHW) or with gas (direct expansion, DX).



RELIABLE POWER SUPPLY SOLUTIONS



The power supply in the data centre must also meet all the requirements for high availability. It is not just the lifeblood of the technical equipment, but also of the air conditioning, the safety systems and the data connections. **A sophisticated concept** with dual power and emergency supply, as well as mains supply from different sources, secured by powerful uninterruptible power supply (UPS) systems and fully automatic emergency power generators (emergency power system, EPS) with up to 72 hours autonomous time are indispensable today in high-availability data centres.

Datwyler offers you robust and reliable solutions for the power supply of your business-critical systems.

For this purpose, there are primarily the most modern standard **UPS and battery banks** and fully modular variants of these products, which ensure the secure operation of your equipment and – tailored to the on-site requirements – full redundancy, zero downtime maintenance and local as well as remote management, making modular power enhancements possible during operational running.

As a necessary enhancement for this purpose, we offer diesel or electric **emergency power generators**, which have proved their worth in environments other than in data centres, for example in the industry. All these generators are designed so that they can be extended by addition-

al units and synchronisation according to location and load.

Of course all associated **electrical equipment components** are included in our portfolio of complete solutions for the data centre: distributors and switching equipment, automatic and static transfer switches (ATS, STS), residual current and overvoltage protection (FI/LS), bus bar systems and the cabling itself.

For normal and UPS power supply we can offer you an innovative **flat cable solution**, which allows the most flexibility with the

minimum of cabling effort. The flat cable system is also available with built-in shielded bus cables, which can be used for signal transmission purposes, such as monitoring the power system.

The implementation of your power supply system is done, as a rule, from the supply transformers or from the building entry as a **continuous 5-conductor network** (according to the TN-S principle), because the separation of the neutral conductor (N) and the protective earth (PE) conductor is a basic requirement for fault-free energy and data transmission.



Reliable power for your mission-critical applications and data warehouse.

FIRE PROTECTION SYSTEMS



To be able to limit the effects of a fire, the individual areas of the data centre are subdivided into several **fire areas** separated from each other by bulkheads. Systems for the early detection of fire (fire prevention) and for fire fighting should be installed in each section.

The fire protection solutions from Datwyler ensure that the valuable equipment and business-critical data in your data centre do not become damaged. Our comprehensive portfolio covers all the systems needed for preventative fire protection, from an active smoke detector system, a fire warning system to gas or aerosol extinguishing systems.

Our modern **active smoke detector systems** operate with a room air suction (RAS) device among other things, and highly-sensitive intelligent sensor technology. This ensures safe early fire detection without continually leading to false alarms. The modular systems offered by Datwyler, which can be used to monitor a whole room as well as single racks, will impress you with their ease of installation, commissioning, programming and maintenance.

Automatic fire extinguishing systems, which operate using inert gases, gaseous chemicals or aerosols, prevent the spread of fire in an emergency, do not cause any

short-circuits and minimise the damage in your data centre.

A **hydrogen detection system** offers early warning and alarm, especially in closed rooms and facilities, and provides an automatic supply of air from a defined threshold value.

Furthermore, there are innovative systems which **reduce the oxygen** in your data centre by supplying nitrogen, so that a fire cannot occur at all. Datwyler has a solution in its portfolio for this fire protection application, operating without the need for pressure control valves.



Eliminate the risk of fire and protect your assets.

MONITORING SOLUTIONS



Many data centre operators consider investment in systems for the control of environmental conditions and the detection of any leaks as an unnecessary expense. Within the scope of our range of solutions, we can therefore offer you **particularly economical monitoring solutions** with which you can cover the whole spectrum of controls: those of the environmental conditions and of power consumption as well as those of the IP cameras and of the system operation.

The systems offered by Datwyler can easily be **integrated** into existing management solutions such as Nagios®, hp® OpenView or Patrol®. Messages about dangerous

deviations can be sent to those people responsible by SMS, e-mail or SNMP, with a visual or acoustic alarm.

Environmental control, safety and management are combined seamlessly together in our solutions. Early detection of deviations makes it possible for you to immediately introduce the required measures to prevent an escalation of the situation – thus counteracting interruptions in operation or even a system failure.

Temperature and humidity can be monitored using hard-wired or radio-frequency sensors which are secured on the ceilings and walls or placed directly in the racks.

Modern **water and leakage controls** operate using various types of detection cables or detection mats which ensure real-time measurement and reliable alarm alerts in business-critical environments.

Datwyler also offers you an economical solution for **power and load monitoring and management**, suitable for the most varied of requirements and enabling effective local and remote monitoring. With this, you have an overview at all times of the quality of the energy supplied, equipment loadings, load curves as well as voltage drops and ripple harmonics – and can plan preventative measures such as repairs or enhancements.



VIDEO MONITORING AND ACCESS CONTROL



Multi-level security systems ensure physical, technical and personal security in the data centre. This starts with monitoring of the site and the buildings and goes on to the control of the individual systems. The control of these systems is through a risk management and building management system which shows the status and monitors normal operation. All areas of the building management technology, including the video monitoring and access control, are connected to it. Messages are captured in an emergency call and service control room, which introduces the necessary measures when needed.

Modern closed circuit television (CCTV) camera systems are available for **video monitoring** in the data centre, offering all the necessary functions: multi-camera management, digital recording, simultaneous replay, image authentication, enhanced search functions including intelligent motion detection (Smart Motion Search), and a user-friendly control centre for remote access.

For **access control**, Datwyler recommends a powerful system solution which operates with hybrid and multi-layer authentication and offers comprehensive security func-

tions. The web control interface, the systems interoperability and the integrated biometrics of this solution ensure at all times that all accesses are monitored and only authorised persons gain access. In addition, all admissions are logged and securely recorded.

HIGH-SPEED AND HIGH-DENSITY COMMUNICATION CABLING



Cabling plays a key role in high-availability. The corner stones of a modern ICT cabling system in the data centre field are **flexibility and continuous application support** for existing and future technologies. The corresponding plug-and-play systems should also offer space-savings in the rack and operate at transmission rates of up to 40 and 100 Gbit/sec.

You can essentially choose between **three different approaches** for the fail-safe high-speed data transmission solution in your data centre: classical ad-hoc cabling using copper and fibre-optic technology, a complete or partially pre-assembled solution with multiple cables (trunks), or a modular high-density fibre-optic solution, for example, the "Datwyler Data Centre Solution".

For the **classical solution** – which may be preferred due to on-site demands or integration with legacy hardware – Datwyler offers you a wide range of high-quality data and patch cables, connecting technologies, distribution boxes, racks and accessories. All conceivable application areas are covered by this solution: from the cabling of small server rooms to complex installations with high-speed requirements.

Pre-assembled systems with trunk cables – cut to length and printed according to the customer's requirements, equipped with connectors or modules and pre-tested in the factory – offer you the advantage

of much faster installation, simpler cable management and easier documentation. A solution like this requires more planning effort in advance but saves time and costs during the installation itself. The trunk cables, which are pre-assembled and capacity-determined in the laboratory, reduce not only the error rate but also the measuring expenditure on-site. With trunk cabling, adds and enhancements can also be quickly and easily implemented.

The **Datwyler Data Centre Solution** is a future-safe, pre-assembled plug-and-go fibre optic solution which has been specially developed for high-density requirements in data centres. It features very high quality cable and components and high-precision connector manufacture. Because of its excellent optical and geometric properties, this solution is suitable for not just all of today's high-speed applications, but also those of the future, such as 32GFC, 40/100G-Ethernet and 120G Infiniband. Modular components which can be configured in any required combination offer users the highest degree of design flexibility.

The data centre cabling provided by Datwyler not only complies with the approved **international standards** ISO/IEC 24764, EN 50173:2011 (Europe) and TIA/EIA-942-2-2010 (SP-3-0092), but also generally exceed current standards and drafts by considerable **margin offers** – and therefore guarantee higher future viability and design flexibility.

The Datwyler solution portfolio covers the whole topology, from supply networks (external network interfaces, ENS), through the main main distribution area (MDA) with core and switching racks to the horizontal or zone distribution area (HDA/ZDA) or to the server and central switch racks.

The selection of cables and connecting technology in data centres is determined by the network topology, IT components and selected cabling concept. There is a trend for new switching architectures and flat hierarchies (diverse Datacenter Fabric models). But we also have a large number of typical architectures: top of rack switching, mainly used in high-density server environments, middle or end of row switching enabling the connection of several server cabinets, as well as integrated switching for blade server networks. In many cases we also realise a central distributor in a patched cross-connect environment. This architecture places significant demands on the quality of the cabling system components.

The **cable support and routing system** must take into account the type of cabling, the fire protection, the electromagnetic compatibility (EMC), the quality of the equipotential bonding in the building and the MICE environmental classification (according to EN 50173-1, for example). In addition it must be designed for future extensions to the system of communication cables.

IT RACKS AND ACCESSORIES



A well-chosen rack or cabinet will not only look good, but will add security, increase the lifespan of your devices and also make it easier to maintain the equipment inside, so saving you money and time.

The IT racks which we offer are as varied as the requirements of our customers. The designs cover **standard racks** in various sizes as well as **modular constructions** which we can supply you customised to the particular occupancy, cooling concept, cabling and/or security requirements.

Among other things, in our wide range of **rack accessories** you will find IP-based monitored and managed PDU's, IP-KVM's, circulating fans, lights, intelligent and configurable locking systems, grounding and equipotential bonding sets, cable management kits, shelves, blanking panels and much more.

INTERIOR FITTINGS AND RACK CONTAINMENT

To complete the fit-out of your data centre, Datwyler offers you high-quality, robust and long-life floor panels, raised floor panels, ceiling panels, partitions, fire doors and much more. As with all installations we complete with the aid of **professional specialist partner companies**, you can be certain that they will not

conflict with the planning and implementation of the other important disciplines and installations such as data cabling or the supply of power or water, and that the result will be in accordance with your specifications and also the applicable standards.

With interior fittings, we direct our special attention to the measures which concern cooling and air conditioning. Here we offer you complete solutions for the installation of **pressurised or raised floors**, including innovative floor panel technologies for variable regulation of cold air.

Central to the energy efficiency of your data centre are **housing solutions** and the accompanying arrangement of **cold and hot aisle containment**. Because the active components and the IT racks in "mature" computer centres often originate from different manufacturers, a variety of shapes and sizes must be taken into account, and these can only be tackled with flexible concepts.

We can upgrade existing IT rooms at any time, also retrospectively, with energy-efficient, reliable **cooling systems** which are designed according to your requirements and which can be integrated simply into the existing infrastructure.



MOBILE DATA CENTRES



Our mobile data centres are ready for use, equipped with the necessary infrastructure and in **closed container solutions**: i.e. compact, secure, transportable and modular.

Mobile data centres are ideal when you have a need for extra capacity at short notice but don't have the time or resources to set up a "traditional" facility. Our mobile solutions offer you the complete infrastructure required to **start operating almost immediately**: air conditioning, power supply, physical protection, access control, fire protection, monitoring and much more. You profit from a plug-and-play solution in a secure environment, which at the same time offers a high degree of flexibility, expandability and efficient power consumption (power usage effectiveness, PUE). With it you minimise the initial investment required and from the start you have an additional data centre

facility and/or an innovative disaster recovery facility.

As with all our solutions, Datwyler's mobile data centres meet the required standards with respect to design and equipment. The installed components, and our manufacturing processes and quality controls meet also the current national and international standards.



OPTIMUM PLANNING AND DOCUMENTATION



Our Panorama CablingView software solution is a tool that is specially tailored to suit electrical and ICT infrastructures in buildings and spaces. It enables **easy and descriptive planning** and fast, clearly arranged, traceable and thereby **„live“ documentation** of all objects of the infrastructure itself, their relationships with one another, as well as the objects and devices connected to it.

Automatic or manual selection is available to trace the connections between these objects, so that lengths and distances can be determined.

Ideally, Panorama should be used at the planning stage. The documentation is cre-

ated automatically during the planning, and the project, together with the software, is handed over to the end customer. The customer can then also plan, illustrate and document successive modifications (moves, adds, changes) without any great effort.

At any time, Panorama CablingView can be used to generate up-to-date material lists, device lists, connection lists and patch lists for the whole property – even across multi-sites – down to the smallest freely definable unit. The product library can be completed at all times with all the objects relevant for your infrastructure.

Datwyler is happy to arrange a live demonstration on-site.

PROFESSIONAL SERVICES

Our services cover all technical and site-based measures which ensure successful project development and trouble-free operation of your data centre.

Audits and audit certification

On request, we will perform reliability testing for you, based on the relevant standards such as TIA-942 Audit & Certification, 3rd party ISO-24762 and ISO-27001 as well as ISO 20000 Audits, Compliance Reviews and Certifications Services. These comprehensive and rigorous tests for evaluation of the conformity of your computer centre to the requirements of the standards (compliance) contain over 3500 criteria and cover the architecture, electrical systems, mechanical systems, security, telecommunications, maintenance and documentation.

Design validation

In order to ensure that all the products and solutions you wish to introduce into your data centre meet your requirements and the standards which apply, we offer you professional help in testing and evaluating the planned and suggested designs and constructions.

Assessments

The timely identification of potential problems at your data centre location can help to prevent further critical consequences – and expensive follow-up actions. We would be pleased to test and evaluate key criteria and elements for you on site, such as the chosen location, the construction of your data centre, the power supply, the physical security, electromagnetic fields, the telecommunications infrastructure and the existing maintenance contracts – on the basis of best practices and the standards which apply.

Project management and control

Datwyler offers you professional project management for all modification and expansion projects, especially for projects concerning your electrical and communications technical infrastructure. Our precise organisation, planning, coordination and control are the requirements for a high-quality, on-time, efficient and cost-effective implementation of your project, which at the same time meets the specified goals and standards and does not interfere with operational running.

In addition, we will also be pleased to take over more comprehensive project management tasks, which cover the complete life-

cycle of the location or system defined by you: from the initial analysis of requirements and the initial design, through detailed planning, tendering and logistics, to installation, acceptance, handover and maintenance.

Our professional project management processes include producing planning schedules, arranging meetings with relevant parties, performing and post-processing of quality controls as well as all measures concerning tests, evaluations, modifications, contingency plans etc., including the associated logistics and personnel deployment planning.

SLA management

Our SLA management offers you the required resources, latest technologies, proven practices and experienced teams of professionals. As a result, you are assured that the targets and availability parameters defined in the SLA are respected and implemented at all times – with the aim of maintaining the reliability of the applications and the infrastructure and to safeguard the profitability and service life of the equipment.

Tests and reports

During 3rd party tests, independent testers and institutes perform strict testing with the aid of advanced equipment and tools, testing each individual component in your data centre so that error-free, fail-safe and reliable operation is guaranteed.

In addition, we provide a complete site acceptance test, ensuring satisfactorily completed testing of the power rating of the mains electricity connection, the UPS and generators, the alarm system, smoke detectors, extinguishing system and enclosure integrity as well as the cooling and power supply.

Users also receive fully detailed documentation of the tests performed and the results; including performance benchmarks, fault, malfunction and deviation reports (which are required to reproduce the tests). This information enables clients to successfully make improvements, should they be necessary, at a later time.

CHECKLISTS

A short, keyword-based stock-take and analysis is helpful for us to gain an initial overview of the measures which you are planning.

We would be pleased to go into these with you in more detail on-site.

What sort of data centre project are you planning?

- New construction
- Reorganisation
- Expansion
- Modernisation
- Documentation and visualisation

What objectives are you aiming for with the project?

- State of the art technology
- Increase in performance, higher availability
- Higher standard of security
- More cost-effective operation/energy savings
- other:

Technical questions about the CURRENT and DESIRED situations (keywords):

- Which hardware is installed / do you wish to install?
- What kind of cooling solution is installed / planned?
- Is a double-floor present / planned? How high?
- What installations are located in the double-floor?
- What UPS solution is installed / planned?
- Type and quality of the existing / planned power cabling?
- Which fire protection systems have you installed / planned?
- During the implementation, do you need a mobile alternative location?
- Have you / are you planning an environmental, power and leakage control?
- Have you / are you planning video monitoring and access control?
- Type and quality of your communications cabling?
- Which interior fittings do you have / are you planning? (e.g. housings)
- How many IT racks do you have / are you planning?
- How are the IT racks set up?
- Which software solutions (for what) do you have / are you planning?
- Is there / are you planning documentation for your data centre?
- Which services are you already using / are you planning?
- Special features of your project?

How do you wish to achieve your aims?

- Measures with short payback time
- High cost-benefit ratio
- Simple as possible, key concept
- Tax perspective of the investment
- Prompt implementation with the fewest possible contact persons and high adherence to schedules



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