

DATACENTER CHECKLIST

Planning Phase

In the column to the far right, we list relevant measures from the IT Baseline Protection Catalogue of the German Federal Office for Information Security [Bundesamt für Sicherheit in der Informationstechnik – BSI] as a reference for you.

Planning phase: General requirements for the data center service provider				
Question	Answer	Supplementary notes	Global Access values	Baseline Protection Catalogue
Legal form and shareholder ratios: owner-run company, AG or partnership?		The 'NSA scandal' and 'Patriot Act' made many customers suddenly conscious of the significance of this question. Prominent providers, in particular in the legal form of an AG, can sometimes change owners quickly. As could be observed in the case of a few providers from the Frankfurt area in recent years, companies, which were previously German owned, are suddenly under foreign control. For this reason, knowledge of the property and company structures is very relevant in order to assess how much the provider is influenced by outside forces or could be in the near future.	Owner-run GmbH, under German management	M 2.252
Does the building belong to the company or companies? If it is just being leased, what is the duration of the leasing contract? Are there renewal options?		Spaces, which are not in the possession of the provider, always present certain risks. When the service provider – for whatever reasons – loses the right of use, this generally also means the end of their customer relationships. This danger increases in the case of leasing contracts, which are not laid out for the long term, with renewal options and in the case of buildings whose purpose is not primarily for data center operations. A practical example: a municipal utility company was leasing space in the basement of a bank. As a result of the renovation of the basement, the leasing contract was terminated by the bank; the company had to move out, with considerable consequences for their customers.	<ul style="list-style-type: none">- DC North: Owner & operator is the EMC HostCo GmbH- DC East: Owner and operator is the Level(3) Corp Long-term leasing contracts	M 2.252 M 2.334
Outsourcing requirements: To what extent is the carryover of internal requirements onto the provider necessary and is the provider able and willing, contractually and demonstrably, to meet these requirements?		Seen from the perspective of data protection, as well as information security, one's own responsibility is routinely expanded in the case of outsourcing. For this reason, which concrete requirements are to be met by a potential service provider should be clearly defined in order to continue to fulfil one's existing obligations. In order to not run into the danger of personal liability on the basis of so-called 'negligence in selection (culpa in eligendo)', the minimum requirements must also be verified in a comprehensible manner. Comprehensive certifications of the provider in question can make this inspection process easier or even obsolete.	In the case of Global Access, implementation takes place on a level, both for organisational and technical obligations, which even regularly exceeds customer needs.	M 2.250, M 2.261 M 2.254 M 2.253
Is the data center certified, and if so, according to which standards?		Not all certificates are equally suitable to cover the actual security needs in a data center. Only certificates, which come from an accepted and preferably accredited site, should be trusted. Standard certifications are those according to ISO 9001, ISO 27001, and ISO 27001 based on IT baseline protection. ISO 9001 does not claim much in regards to the existing security since it is a certification, which is not from the field of information security. With an ISO 27001 certification, it can be proven that there is a functioning process in regards to the implementation of information security. A specified implementation level is not documented with this. Only a certification according to IT baseline protection tells something about the minimum levels of security measurements to be expected. Another tip: It is possible to be certified through a foreign provider. For example, through the British 'BSI'. In this case, it is not a certification according to the IT baseline protection of the BSI, the German Federal Office for Information Security. Still some providers promote, rather misleadingly, a 'BSI certificate' on the German market! You can check which companies are actually certified according to IT baseline protection at the following link: https://www.bsi.bund.de/DE/Themen/ZertifizierungundAnerkennung/Zertifizierung27001/ErteilteZertifikate/iso27001zertifikate_node.html Always pay close attention to the 'scope of application'! This must be listed on the certificate. In the case that the individual spaces or area alone have been certified, but not the entire area, then the certification will be significantly less relevant. The same holds true for when the location of interest is not within the scope of services, or when services are not exclusively provided at that location. When in doubt, check to see if the certification also includes the locations and infrastructures from which the administration is also carried out.	Global Access is certified according to ISO 9001 and 27001 as well as according to BSI IT baseline protection [BSI IT-Grundschutz]. For DC North, the operator has their own ISO 27001.	M 2.192
Data protection: If data protection is important because surveillance measures or IT services (maintenance, backup, user administration, etc.) are provided: is an appropriate contract for commissioned data protection offered? Are there really NO services being provided by so-called 'third-party countries'?		In the field of data centers, an 'agreement for commissioned data processing' can quickly become compulsory. In this case, be aware of whether your provider is willing and able to make such a contract with you and is able to demonstrably carry this out. Caution: Automatic data processing [automatische Datenverarbeitung –ADV] must contain concrete regulations and, above all, detailed (!) 'technical and organisational measures' for all locations, from where access to your data might be possible. If data center employees are able to work remotely, then these remote workplaces must also be dealt with appropriately. We are observing more and more often that the level of security in 'office work places' and the data center differs significantly.	All services are carried out in Germany. The office spaces of Global Access administrators and technicians are located within the data center. Global Access provides compliant contracts for commissioned data processing.	M 2.511

DATACENTER CHECKLIST

Building and data center space

In the column to the far right, we list relevant measures from the IT Baseline Protection Catalogue of the German Federal Office for Information Security [Bundesamt für Sicherheit in der Informationstechnik – BSI] as a reference for you.

Building				
Question	Answer	Please consider the following:	Global Access values	Baseline Protection Catalogues
History of the building: <ul style="list-style-type: none">When it was originally built, was it built specifically to be a data center?If not, how was the building used previously? When and how was it converted, etc.?How many floors does the building have?Is the building being used solely as a data center, or is there another third-party usage? If there is third-party usage: what is the type of usage, and is access to the building the same for everyone?		This information is very telling and should eventually lead to additional questions on your side. Example: If the location, for example, was previously used as cold storage, then it is very likely that there is already a high level of electrical power available from one or more substations. This is a clear indication that there is a very good power source. Such a building would also be ready, in terms of climate control, for high cooling loads and the 'outer shell' would already be well insulated. Both points are beneficial to the operation of a data center. However, if the location was previously a tyre warehouse, then it would be fitting to ask questions about insulation, power supply and climate control.	DC North The building was originally for cold storage and has ideal conditions, in particular with regard to current supply and climate control as a result. The ceiling height of the former high-rack facilities has the best conditions on every storey for warm air to flow upward. In two of three storeys, other services are offered. Access to the building is the same for all businesses, separate access to the data center depends on individual authorisation. DC East Previously the building was a tire warehouse and was elaborately renovated into a professional data center. The building is solely being used as a data center. The former high-rack facilities offer the ideal conditions for warm air to naturally flow upwards. The building is solely being used as a data center. Access to the data center area and the administrative rooms is divided.	M 2.334
Perimeter protection? Is there a fence around the grounds? Is there increased protection where necessary such as tank barriers, vehicle-access barriers, bunkers?		Data centers should only be accessible in predetermined ways when possible. A perimeter fence is a routine standard. In the case when a raised level of security is necessary, special access, or even tank barriers can be necessary. If the data center operations are not carried out on the ground floor, then the previously mentioned points are perhaps irrelevant. In 2008, a vehicle was used to break into the ground floor of a data center in Frankfurt; since then many customers place a greater level of importance on perimeter protection.	The data center used by Global Access is enclosed/fenced-in, possess no tank barriers though, or the like. The data center area in DC North is located on the second floor.	M 1.19 M 1.79
The area surrounding the building:		The surrounding environment can influence the security significantly. Buildings, which are more centrally located, are less often in the situation where they are completely unobserved and watch guards or police could arrive more quickly to the location in the	Both data centers are located in industrial areas within the Munich urban	M 1.16

Data center space				
Question	Answer	Please consider the following:	Global Access	Baseline Protection Catalogue
Are there different zones or rooms? If yes, then in which sizes?		Important: In this context, extinguishing zones are often mentioned and not fire sections, which are different. In the case of water extinguishing, it is possible that there are various extinguishing zones in one fire section.	DC North: Fire sections are between 175 and 400 sqm in size, divided by several F90 walls. Laid out according to DIN4102. A complete separation of climate control, power and extinguishing provisions. DC East: A 3,200 sqm fire section, divided into three extinguishing zones; the underfloor is divided into three 'tubs' due to a water extinguishing system.	M 1.75
How are the zones or rooms separated from one another? Fence, F90 wall or something else? Are the building sections laid out according to DIN4102, or respectively EN1047/1 and /2?				
Do the doors to the server space have adequate dimensions (height x width)?		Can all machines be transported without problem? Do all hallways have adequate dimensions? Are there thresholds or steps, which must be negotiated?	DC North + East All rack sizes are available.	
What is the load per sqm in kN?		This is important for the delivery of prefabricated cabinets and the assembly of empty racks with subsequent fittings. Confirm that you can actually transport prefabricated cabinets with a maximum capacity from the delivery ramp to parking spaces, with this weight. Loads are indicated in kN (kilonewton) and are equivalent to the following conversion: 10 kN = 1,000 kg.	DC North + East Up to 20 kN/sqm	
What is the load for each foundation slab in kN?			DC North + East Up to 8 kN without an additional substructure	
Is there a raised floor? How high is it?		The higher the raised- floor is, the more capacity there is for cold air. Make sure that you are shown the underfloor of an existing space. Are the visible cables cleanly led on tracks, and can enough air circulate?	DC North: Yes, 100 cm DC North: Yes, 60 cm	
Which fire protection classification does the raised floor have?		A1/A2 (non-flammable) B1 (low flammability) F-30 (fire-retardant) F-60 (fire-retardant) F-90 (fire-retardant)	DC North + East A1	
How large are the foundation slabs in cm x cm?		60cm x 60cm is the standard in Germany and fits well to the rack widths of standard 19" racks, which are exactly 60cm on the outside.	DC North + East 60 cm x 60 cm	
Where is power delivered from: from above or through the raised floor?		Preferably from the underfloor. In this case, for the most part only the operator has access and less mistakes arise. This is standard in most data center locations.	DC North + East Raised floor	
From where are the data lines supplied (above or raised floor)?		For security reasons, the underfloor can be rated higher. The area over the racks is the most ideal in terms of the simplicity of one's wiring. Often the carrier connections come from below and one's own wiring may be installed above.	DC North + East Delivery from the operator from the underfloor. Additional wiring from Global Access via the racks	
From where are the data lines supplied (above or raised floor)?		For security reasons, the underfloor can be rated higher. The area over the racks is the most ideal in terms of the simplicity of one's wiring. Often the carrier connections come from below and one's own wiring may be installed above.	DC North + East Delivery from the operator from the underfloor. Additional wiring from Global Access via the racks	
Have cable routes been installed? <ul style="list-style-type: none">copperfibre			DC North + East Yes, copper and fibre	
Is it permissible to construct one's own cabinets and if yes, then to which measurements?		For example, some storage manufacturers only deliver their systems in prefabricated racks. If you use different ones, then most manufacturers will no longer offer the usual manufacturer warranty. For this reason, this option is a MUST .	DC North + East Yes, a separate offer	
Can an area (suite, or the like) be set up to be a separate space on site?			DC North + East Yes, a dedicated area can be separated according to size with a panel wall, privacy screen and, if necessary, with entrance and creepage protection.	
<ul style="list-style-type: none">With privacy screen?With underfloor creepage prevention?With protection from intruders climbing over?Are the cable routes hanging from the ceiling, are they lying on the racks or are they located in the underfloor?Who owns any cable routes which were ordered by customers and installed, etc. after their installation?What are the maximum dimensions that one's cabinets may have?Can the access system of the entire data center be expanded to one's own area or will this space only be secured by a normal lock-and-key system, or respectively should one install one's own system?			Yes Yes Yes Cable routes are partly on the racks and hung from the ceiling. Cable routes and other installations remain the property of Global Access. 220 cm high, 60 - 100 cm wide, maximum 120cm deep	
At which levels are the areas (basement, ground floor, first floor)?		Important for the security of the devices. Basement spaces must be precisely lit in case of the danger of water intrusion. In the case of the upper floors, where applicable, the stability of its construction should be checked. In the case of the ground floor, the perimeter protection is important.	DC North: 2 nd floor DC EAST: Ground floor	
Is Remote Hands Service useable? <ul style="list-style-type: none">Billing units (e.g. the complete first hour, every additional ¼ hour)?Times at which this service is useable?Average reaction time on request?Definable SLAs possible?Allotment of hours obtainable?Which services can be taken over?		Check if the provider has his/her own staff on site. If yes, this service can save valuable time when one's systems malfunction. Do a cost/benefit calculation!	Yes Per-minute billing methods 24/7 2h with an explicit contract, otherwise with best effort Yes Yes Hardware installation and removal. Help with configuration	
Is it forbidden to smoke, eat, or drink? In which rooms?			It is forbidden to smoke, eat and drink in all areas.	

DATACENTER CHECKLIST

Power supply & Connectivity

In the column to the far right, we list relevant measures from the IT Baseline Protection Catalogue of the German Federal Office for Information Security [Bundesamt für Sicherheit in der Informationstechnik – BSI] as a reference for you.

Power supply and cooling

Question	Answer	Please consider the following	Implementation at Global Access	Baseline Protection Catalogue
Which tier standard does the area have?		See https://uptimeinstitute.com/TierCertification/ There is actually no tier 3+. However, it is used informally when some tier 3 and 4 areas are mixed	DC North: Tier 3+ DC East: Tier 3	
Which POE value does the data center have?		The POE (power efficiency coefficient) value, which is given by a data center operation, defines how much more energy is used by the terminal device for cooling and common-area electricity (light in the corridor, camera surveillance, etc.) with the indication of a factor. In the case of classic cooling concepts, with a compressor and without special measures, it is around 2, 3-times the normal power consumption of the terminal device. As soon as extra measures, such as compressor cooling on the roof with ambient air, photovoltaic facilities, groundwater cooling, or other additional things are being used, the value will sink, but will never fall below 1.3. Important: This alone does not make something 'Green-IT', as the power can come from a nuclear power plant or 'old polluters'. The PoE value solely defines the efficiency in operation.	DC North: 1.9 DC East: 2.3	
Is one's area dedicatedly cooled or do the existing units cool the various areas in a mixed manner?		The dedicated usage indicates that the secure supply of cool air can be more easily maintained and that no external influence can endanger this supply though high usage by other area users	DC North: dedicated cooling of the 175 sqm area DC East: mixed cooling of the 3,200 sqm area	
Where are the heat exchangers located (e.g. chiller)?			DC North + East: On the roof	
To which temperature is it being cooled?			DC North: 19 degrees Celsius DC East: 19 degrees Celsius	
In what way is it being cooled?		Slat cooling? Ground water cooling? Or classic compressor (similar to refrigerator)? CAUTION: Slat and ground water cooling are 'hip', 'green' and generate a good PoE value mathematically. However, these systems cannot react to a change in the outside temperature and adjust. For this reason, the operator must then additionally cool with compressors. This increases overall the costs through the creation and maintenance of two cooling concepts and the technology, which is necessary, to allow for the different concepts to work with one another. Practically all vendors place the heat exchanger on the roof, since naturally the greatest natural air circulation can be found there. Tall buildings have an advantage here, since air movement is greater. Naturally, this decreases the PoE value. Care should be taken that the heat exchanger is set up in the shade, or respectively, that a form of sun protection is built in front of it; this has just as favourable of an impact on the PoE value.	DC North: A classic heat exchanger with compressor set up on the shady side of the roof. Distinctive feature: The building is especially high, with no neighbouring buildings at the same height and has very good, natural wind supply. As a result, less energy is used and the compressors must only be turned on 4 months during the year. This generates the good PoE value in the case of the classic cooling concept. DC East: Classic heat exchange with compressor, set up on the shady side of the roof.	
Does cooling come through the underfloor and are there cooling zones in the under-floor?		If not, then the entire volume of air is dispersed to the entire space. This is advantageous if one is the exclusively using the space, but not so practical if one is sharing the area with other users.	DC North: cooling through raised-access floor, one zone. Air passes through the floor via perforated plates in front of the 19" cabinets. DC East: cooling through raised-access floor, one zone. Air passes through the floor via perforated plates in front of the 19" cabinets.	
Is the air also dehumidified?		This should be standard in all modern data centers.	DC North + East: Yes	
What is the maximum cooling capacity estimated per sqm of the area or per rack?			DC North: 2kW/sqm DC East: 1.5kW/sqm	
Which is the minimum?			DC North + East: Yes, Yes	
Are perforated plates available, or respectively can they be installed subsequently?				
Is water cooling possible in the data center? Are there supply and discharge pipes available?		In the case of most providers, no such concept is possible with water flow.	DC North + East: No	
How far apart must cabinets stand in order that minimum cooling can take place between the cabinets?		In order to have space to manoeuvre, this should be at least 90cm, but it is better if it is 120 cm or more.	DC North + East: 90cm	
Is there cold aisle containment?		This concept brings a high rate of efficiency. The air outside of the housed cold aisle area will not be unnecessarily cooled. As a result, a lot of energy is saved.	DC North: Yes, per standard DC East: An option in one's suite	
How is air circulation predetermined?				
<div><div></div><div>Is there a cold/hot aisle concept?</div></div>		In the case of the cold/hot aisle principle, cold air is blown into the room and taken out through the raised-access floor via perforated plates or something similar. On the backside, the warm air from the machines is dispensed and rises up and away, is drawn in by air conditioning units on the walls, is dehumidified, cooled and is blown back into the underfloor with pressure.	DC North + East: Cold/hot aisle concept	
<div><div></div><div>Are cabinets closed and is the air in the cabinet lifted through the underfloor and dispensed above → direct cabinet cooling?</div></div>		Care must be taken that all machines are installed the right way around. Switches, or other devices, which have side ventilation are to be outfitted with special accessories, so that the air can stream in from the front, cooled, on the right side and flow into the hot aisle. There are also concepts like direct cabinet cooling. Besides the fact that the racks must be lower and wider in order to be able to bring in the air into the cabinet, and one loses valuable place in this process, the devices on the bottom tend to pull away the most cold air and the devices above then no longer receive enough. 'Hot Spot devices' should be set up on top in the case of this concept.	DC North + East: No	
Amount of power feeds to the building of transformer stations		And the question: Are these dedicated? In 2013, there was a major blackout in Munich where a data center provider was still serviced by transformer station, but not the rest of the surrounding area! This was the advantage of the dedicated connection to the transformer station. In the case of several power feeds from one transformer station, will the routes to this be led separately or together? → Keyword being damage (caused by excavators), which damages both at the same time?	DC North: 1 with two monitored, dedicated differential current lines DC East: 1, shared	
Amount of different transformer stations, which supply the building. Do these come from one or more routes?			DC North + East: 1	
Which machines are housed together (e.g. USVs and USV in one room, generators in another)			DC North + East: all systems are separately housed	
Where are the transformer rooms located?			DC North: Basement DC East: Ground floor, South-East side	
How many transformers are there?			DC North: 2 DC East: 1	
How many USVs are available?		Direct/alternating current?	DC North: 5 DC East: 7	
Can the PDUs be supplied at will by transformers, generators, and USV?			DC North + East: Yes	
Which uptime standard is available (Tier 1 – 4)				
<div><div></div><div>Are there separate power stations available?</div></div>				
<div><div></div><div>How are the power rails laid out?</div></div>				
<div><div></div><div>In an emergency, how is power switching configured?</div></div>				
Which types of energy are obtainable?				
<div><div></div><div>Direct current (-48v)</div></div>			DC North + East: Yes, as a project connection	
<div><div></div><div>Alternating current (1-phase, up to 230v or 3-phase, up to 400v)</div></div>			DC North: 230v/16a, 1-phase 400v/16a, 3-phase 400v/32a, 3-phase DC East: 230v/16a, 1-phase 400v/16a, 3-phase DC North + East: CEE connection blue 1-phase, IEC-60309-2 CEE red connection 3-phase, IEC-60309-2 Schuko or non-heating connectors as a standard configuration - manageable non-heating connectors on request Automated Transfer Switch (ATS) for usage of two circuits for devices with only one power supply	
EPS		Generally, an EPS (emergency power system) is operated as a diesel aggregate. This should permanently be warmed up and should be given a visual check at intervals. In addition, it should be routinely started and ideally tested against a load resistance. One or two Black Building Tests per year should be implemented, where the external power supply is shut off and the automatic switch to UPS and EPS should be tested.		
<div><div></div><div>Where are the aggregates located?</div></div>			DC North: No DC East: No DC North + East: South side, next to the data center	
<div><div></div><div>Are the aggregates positioned at different locations?</div></div>		Generally, an EPS can carry a full load after 30 – 60 seconds. Operators have fixed supplier contracts with fuel suppliers and it should be clarified what the process of the triggering of such a delivery looks like (manual/automatic) and how long it takes until the actual delivery.	DC North+ East: No, next to each other	
<div><div></div><div>Number of generators?</div></div>				
<div><div></div><div>N+1 available?</div></div>			DC North: 3, can be upgraded to 5 DC East: 2, can be upgraded to 3 DC North+ East: Yes	
<div><div></div><div>Start-up time until a full load is possible?</div></div>			DC North+ East: approximately 60 seconds	
<div><div></div><div>Size of tank in litres?</div></div>			DC North: 10,000 litres DC East: 20,000 litres	
<div><div></div><div>Maximum running time in the case of a filling in a real-life, partial load and a theoretical full load?</div></div>			DC North: 20 hours DC East: 30 hours	
<div><div></div><div>Are there supplier contracts available? When is the fuel refilled?</div></div>				
<div><div></div><div>Maintenance intervals?</div></div>			DC North + East: quarterly	
<div><div></div><div>Interval of visual inspection?</div></div>			DC North+ East: monthly	
<div><div></div><div>Interval of test against load resistance?</div></div>			DC North: No load test against resistance DC East: monthly	
<div><div></div><div>Interval of 'Black Building' test?</div></div>			DC North + East: annually	
Direct current batteries available?				
<div><div></div><div>How many independent blocks are available?</div></div>			DC North: Not in use DC East: 3 blocks	
<div><div></div><div>Maximum running time in the case of a real-life, partial and theoretical, full load?</div></div>			DC North: Not in use DC East: 120 minutes	
Alternating current UPS available?				
<div><div></div><div>Various UPS manufacturers in use for higher redundancy?</div></div>			DC North: No DC East: No	
<div><div></div><div>How many independent blocks are available?</div></div>			DC North: 3 blocks DC East: 3 blocks	
<div><div></div><div>Maximum running time in the current case of expansion of the data center and in the case of the theoretical full load?</div></div>			DC North + East: 15 – 25 minutes	
Can one pull power from various PDUs/phases?			DC North + East: Yes	
Limit of the quantity of electricity through power dissipation in kVA (e.g. due to max. cooling load)			DC North+ East: Approx. factor 0.9	
Can additional service/capacity be ordered beyond the agreed upon amount of the installed load?		This question is important for both the power supply to the devices and the cooling units. Normally, a maximum installed load is agreed upon per rack or area in kW. <ul style="list-style-type: none">- Can one obtain service beyond this value? Or must one then split up the application between several units (racks, suites)?- Does one lose the SLA or respectively the assurance of availability if one uses more service than was agreed upon without an amended agreement?- Does a 'penalty charge' arise, if more service is used than was agreed upon? In which units is the 'penalty charge' billed and to what price?- Does a shutdown result in the event of excessive use?	DC North+ East: Yes	
Is there a possibility to install one's own PDUs?		These questions are important. Generally, an IT-environment grows in power and cooling demand over time. Some providers then make life difficult. Affordable data center start-up packages are very tightly calculated and not very flexible and customers do not have the opportunity to grow in an orderly fashion or only through cumbersome constructs or the upgrading of the complete infrastructure. Some providers generally make SUB-PDUs available. Some providers even allow the customers to install their own mini PDUs on every rack (in connection with power strips), as a rule, with defined transfer connectors (IEE CEE, etc.)	DC North+ East: Yes, sub PDUs	
Are power strips provided? What do these look like? Do the strips have ampere meters/watt meters? Are the strips IP-operable via SSH, Telnet or WEB? Is the current amount of power usage readable in the eventual case of web strips?			DC North+ East: All types of strips are available as an option: <ul style="list-style-type: none">- Without switch- Metering and switch on every strip- Metering and switch at every exit Global Access delivers all load values for every power strip in the service portal with historical values on an hourly basis	
Is power billed on a FLAT rate (Ampere, 'breaker power') or METERED (kW)?			DC North+ East: Metered per kWh	
How is the power usage determined?	<ul style="list-style-type: none">Are there automatic meters, which periodically measure the demandIs a reading taken manually? If yes,<ul style="list-style-type: none">does the reading always take place on the last day of the month or one the first of the month or is it sporadic.what happens when the planned day to take a reading falls on a weekend or holiday? When will it then be read?	If manually read, have the calculation of the used connected load = is determined through usage, explained to you. 35 days of power, if they are falsely placed, can prevent the monthly connected load as being higher, and in some cases can result in subsequent billing.	DC North + East: Automatic reading of every phase in 19" rack on an hourly basis. Notification in the service portal of kW, kWh, ampere, volt Analysis is performed to an exact period, regardless of whether the meter-reading date takes place on a weekend.	
How is the actual usage of the connected load calculated per month	<ul style="list-style-type: none">Based on the monthly average of the complete kWh sum, divided by the difference in days between the last and the current calculation?As mentioned above, but on the basis of short, measured interval values (e.g.: every 30 minutes)If yes, at which interval?		DC North+ East: On the basis of interval values. The highest kW value is referred to for the billing.	
How is the order of backup operated (strips, PDU, batteries, diesel)? At which point is which safety layer activated in the case of a fault?		The safeguarding of the power circuit in the rack should be quick, that in the PDU average and that of the entire PDU very sluggish. Thus even a very high overvoltage cannot endanger the next level of protection. Safety fuses in the underfloor are fundamentally sluggish, even when they are supposed to be activated quickly. This is due to the fact that they react later due to the cool air.	Strips (16 or 32a), PDU (50 or 100a), USV, transformer station/diesel	
Can the connected load of several racks be used in one sum?		Some providers make it possible to use the connected load of several racks in one sum, so to speak as a 'mini private suite', taking into consideration that the maximum value in a rack is not surpassed. Example: The racks in the data center can use up to 8kW from the connected load. A customer orders three racks, each with 3 kW connected load = 9 kW in total. The customer sets up their application so that they have two racks carrying 1.5kW and one rack 5 kW. Providers that allow for the connected load to be totalled up, do not re-bill in the above-mentioned example. However, most data center providers do not provide a model for the totalling up of the connected load of several racks and view each rack as separate on the bill. IN the above-mentioned example, the 5kW rack would be re-billed for two kW and the SLA would be broken!	DC North+ East: Yes	

Fire precautions/extinguishing and network connectivity

Gas extinguishing
<div><div></div><div>Type of gas? Inergen, Halon?</div></div>
<div><div></div><div>How many rooms are there for the gas? How large is the sqm number, which the gas can extinguish?</div></div>
<div><div></div><div>Is the mixture equipped as such that it can extinguish immediately or must an evacuation take place beforehand?</div></div>
<div><div></div><div>Where does the gas enter from? (above, underfloor)?</div></div>
<div><div></div><div>Can a difference in temperature be expected when the gas enters? If yes, how many degrees C?</div></div>
<div><div></div><div>Is there a fire early warning system (e.g. also VESDA, sniffer system)? If yes, which and how do they function?</div></div>
<div><div></div><div>Is there a process, which is executed after a fire has been detected? What does this process look like?</div></div>
What happens if the gas extinguishing cannot extinguish all rooms. How does the fire brigade proceed? Will water then be used to try and extinguish?
Will the power supply be interrupted during the extinguishing? If yes, does this happen manually or automatically? By whom?
Is there a fire detection system with automatic alerting of the fire brigade?
Are fire drills conducted? If yes, how often?
Does a fire protection system exist?
After a fire, how is the smoke removed out of the room/building?
Are there water detectors installed in the data center?

DATACENTER CHECKLIST

Access protection and security

In the column to the far right, we list relevant measures from the IT Baseline Protection Catalogue of the German Federal Office for Information Security [Bundesamt für Sicherheit in der Informationstechnik – BSI] as a reference for you.

Access protection and security

Question	Answer	Please consider the following:	Implementation at Global Access	Baseline Protection Catalogue
Is there a security service on site, or something similar existing, which is supervising all entries? Must these entries always be authorised beforehand or not?			DC North: Yes, 24/7. Entries do not have to be authorised every time. DC East: No. Entries do not have to be authorised every time.	
How many tiers must be gone through, as a combination, until one can reach the infrastructure		There are data center operators which require registration with security, with an authentication check, personalised chip card with PIN code, a biometric feature and in addition a code or key for the door to the racks. This would be a five-tiered entry system.	DC North Two-tiered authorisation process <ol style="list-style-type: none">Property: personalised RFID chipBiometrics: scan of the middle finger DC East Three-tiered authorisation process <ol style="list-style-type: none">Property: personalised RFID chip card with photoMemorise: 4-digit, individualised PINBiometrics: scan of the palm	
Which zones must be passed through until one reaches the infrastructure? How exactly is the entry procedure operated? Where are the checkpoints?		This could be, for example Advance notice of the visit to the data center for co-workers who are not permanently authorised <ol style="list-style-type: none">Entry to the premises with chip cardEntry to the building with chip card-code combinationRegistration at security with personal identification/passEntry to the data center area with chip card-palm combination and interlock systemEntry to private suite with chip card- code combinationEntry to the rack with code combination at the lock This would be an example for a 6-tiered entry control system.	DC North Five tiers: <ol style="list-style-type: none">Building door with finger scanData center entrance with finger scanSingle access entry control system with personalised, allocated RFID chipSuite with finger scanRack with code or as an option with personalised, allocated RFID chip DC East Five tiers: <ol style="list-style-type: none">Gate to the premises with a personalised, allocated RFID cardBuilding entrance with RFID card and connected to this the entry of a 4-digi PIN DC North Five tiers: <ol style="list-style-type: none">Building door with finger scanData center entrance with finger scanSingle access entry control system with personalised, allocated RFID chipSuite with finger scanRack with code or as an option with personalised, allocated RFID chip DC East Five tiers: <ol style="list-style-type: none">Gate to the premises with a personalised, allocated RFID cardBuilding entrance with RFID card and connected to this the entry of a 4-digi PINData center entrance with RFID card and connected to this a palm scanSuite with code or personalised, allocated RFID card and connected to this the entry of a 4-digit PINRack with code or an option with RFID chip	
Which zones must be passed through until one reaches the infrastructure? How exactly is the entry procedure operated? Where are the checkpoints?		This could be, for example Advance notice of the visit to the data center for co-workers who are not permanently authorised <ol style="list-style-type: none">Entry to the premises with chip cardEntry to the building with chip card-code combinationRegistration at security with personal identification/passEntry to the data center area with chip card-palm combination and interlock systemEntry to private suite with chip card- code combinationEntry to the rack with code combination at the lock This would be an example for a 6-tiered entry control system.		
Are RFID chip cards available?			Yes	
<div>○ Is the card issued permanently or temporarily (ad hoc or with an expiration date)?</div>			DC North + East Permanently issued. Expires after a year, if it is not extended	
<div>○ Does the card stay on site or does the user take the card home?</div>			DC North + East User carries the card with them.	
<div>○ Is the card secured with a PIN code?</div>			DC North: No DC East: Yes	
<div>○ Is the card linked with a biometric feature? Which kind?</div>			DC North: Yes, finger scan DC East: Yes, palm scan	
<div>○ Are there biometric access security measures?</div> <div>How exactly is the access procedure?</div>		Finger, iris, palm scan, etc.	DC North: Yes, see point DC East: Yes, palm scan DC North + East Entries can be fixed to weekdays or specific times. Temporary access is possible with notice, but not without supervision. No web tool available	
Is registration at security or registration necessary before each entry, or is an unsupervised entry possible?			DC North + East No	
Can all staff be authorised for entry or is there a limit?			DC North + East Anyone can be authorized, no quantitative restrictions	
Can an employee themselves bring a visitor along? If yes, how many and, in necessary, who checks this?			DC North + East Yes, up to two	
Are there doors, where one needs an entry card not only to enter but also to leave?			DC North Yes, at the single access entry control system, when leaving the data center DC EAST Yes, when leaving the data center	
24/365 access possible?			DC North + East Yes	
Is there an interlock system available?			DC North: Yes DC East: No	
Is there security staff on site? At what times			DC North: yes, 24/7 DC East: No	
Are there technicians on site? At what times			DC North + East: Yes, during working hours 8am – 7pm	
Surveillance cameras				
How many cameras are available? Also infrared cameras??			DC North: 42, infrared in part DC East: 34, infrared in part	
Can one's own camera system be installed?		Who operates these? Can the operator also manage these as well, or does an additional system need to be put in place?	DC North + East: No	
Where are the security cameras?				
<div>○ Around the building?</div>			DC North: No DC East: yes	
<div>○ Building?</div>			DC North: yes DC East: yes	
<div>○ Data center?</div>			DC North: yes DC East: yes	
<div>○ Suite?</div>			DC North: yes DC East: yes	
<div>○ Emergency exits?</div>			DC North: yes DC East: yes	
<div>○ Access doors?</div>			DC North: yes DC East: yes	
How far in the past can one access the logs of the entry control system and camera. Where are these saved?		Relevance to privacy protection! In this case, there may be limits, which are real and in regards to time; it may also have to do with "commissioned processing".		
<div>○ Camera logs</div>			DC North: 12 months DC East: 3 months	
<div>○ Entry control logs (chip card, biometrics, etc.)</div>			DC North: 12 months DC East: 3 months	
Is it possible to send an alarm to end customers (automatically or through security service)?			DC North + East No	
Is there an intruder detection system? How is one alerted? What is the procedure in case of a notification?			DC North + East Yes. Reports arrive at an external security company and at the NOC (Network Operations Center)	