

Telia Safe Data Center Solution

Telia Safe Data Center Solution enables companies to rent and use data centers which are managed by Telia and which are in accordance with priority class TL1 regulation by the Finnish Communications Regulatory Authority. A reliable and safe data center solution for a company includes facilities options for various needs and facilities-specific supplementary services supplementing them.

Experts who are specialized in Telia's data centers are available for the company, if need be, from the planning of the overall facilities solution all the way to the "turnkey" delivery.

1.1 Service solution

Telia Safe Data Center Solution is provided by Telia Finland Oyj (here in after Telia).

The service solution includes the following data center options, as agreed on:

Company-level data center services

Basics concerning the facilities:

Facilities management

Facilities plan

Setting up the facilities

X = included

V = available as a supplementary service

Data center solution options	Basic	Basic+	Premium	Premium+
Rental facilities				
Room, no less than 12m ²	X			
- space separated from the room by a cage, for 8 or 16 cabinets		X		
- Server room space with automated control for 8 or 16 cabinets			X	
- Server room space with automated control and equipment cabinets, alternatives: Small or large				X
Access to the facilities				
- Definition of access to the facilities	X	X	X	X
- Access control: Access control terminal and locking	X	X	X	X
- Admission service	V	V	V	V
Electricity				
- Facilities-specific meter	X	X	X	X
- Invoicing based on consumption	X	X	X	X
- Reserve power redundancy reservation (N+1 generator (GEN))	V	V	V	V
- Additional redundancy reservation UPS	V	V	V	V
- Additional redundancy reservation 48 VDC	V	V	V	V
Cabling				
- Connection cable	X	X	X	X
Facilities servicing and maintenance	X	X	X	X
Customer service for data centers (site management)	X	X	X	X

Company information

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Pasilan asema-aukio 1, 00520 HELSINKI
Registered office: Helsinki
Business ID: 1475607-9, VAT No. FI14756079

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1.2 Description of functionalities

1.2.1 Company-level data center solutions

Basics concerning the facilities

The Telia Safe data center solution mainly offers data centers that comply with the priority class TL1 regulation by the Finnish Communications Regulatory Authority, "Viestintäverkköjen ja palvelujen varmistamisesta" TRAFICOM 54 B/2014 M, by renting them for use by the company. Meeting the requirements set for telecommunications equipment facilities, Telia's data centers provide a secure, monitored environment for telecommunications equipment.

Preparing the company's rental data center

Telia will prepare the rental data center before the installation of the equipment as agreed with the company. The Customer will be charged for any costs arising from arrangements and installations. Telia grants access for the company's designated persons to the rental facilities according to the terms and conditions of the agreement.

Data center rental procedure

The availability of a data center is always determined on a case-by-case basis with the help of an availability enquiry. The parties agree together on the delivery time of the data center and the associated services on a case-by-case basis. If the delivery of the equipment location or service is delayed or if it has become obvious that Telia cannot meet the delivery time agreed between the parties, Telia must immediately inform the Customer of the delay and the reason for the delay and agree on a new delivery time.

Facilities management

Facilities that are on Telia's responsibility have round-the-clock monitoring and technical facility service, controlled access, as well as controlled environmental conditions. Available on all the facilities are:

- 230 VAC, non-redundant power supply
- 230 VAC redundant
- 48 VDC redundant
- Reserve power
- Grounding
- On-site cooling system
- Goal temperature 15–28 °C

Facilities plan

A need survey is carried out with the customer, in order to find a suitable facilities solution for the customer. In such a need survey, the presumed power consumption of the customer's devices, telecommunications needs, requirements concerning security, redundancy etc. are examined.

A facilities plan is made of the facilities rented to the customer, which shows the size, location and category level of the rental facilities to be rented. The facilities of equipment stations may differ from one another, which is why each entity to be rented must be planned equipment station specifically. An on-site visit is usually required.

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Setting up the facilities

The facilities will be built in accordance with the facilities plan. The schedule for setting up the facilities is agreed on with the customer on a case-by-case basis, taking into account, for example, the conditions of the equipment station and the level of furnishing of the facilities to be rented.

1.2.2 Data center solutions

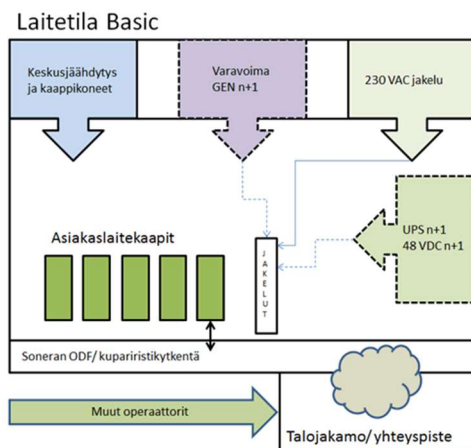
Rental facilities

The rent of the data center is based on the price per square meter, including the cooling system, repairing and maintenance costs of the cooling systems, and on-site management of the rental facilities. Equipment electricity of non-redundant 230 VAC, provided with metering, is delivered to all rental facilities as part of the service. Making the electric power supply redundant is separately agreed on.

As regards their furnishing, Telia's data centers can differ from one another concerning, for example, the number of mainframe computers, cooling, or reserve power. The rental data centers have been divided into Basic, Basic+, Premium, and Premium+ facilities based on their purpose of use. The geographical locations and availability of the facilities is checked facilities-specifically.

Basic

The company rents an entire data center from Telia's equipment station, which has the conditions provided by the equipment station at any one time. The minimum size of the rental facilities is 12 m², with the room sizes varying site-by-site. The capacity for cooling the customer devices is approximately 300 W/m². Access to the facilities is prevented from outsiders, and the access door is linked to access control.



The facility is provided with 230 VAC non-redundant power supply, which has a meter measuring the consumption. Electrical power is charged from the company according to use. Making electric power redundant is offered and agreed on separately as needed. The electric power and cooling capacity of the data center is defined equipment station specifically.

Telia's standard delivery includes a fibre optic cable connection comprising 24 connections (single mode/SM) from Telia's ODF to the data center that the customer has rented (for more details, see section 1.2.5). The company can also itself take care of the furnishing of the data center and in-house network cabling, as separately agreed on.

The facility can have a raised floor or basic floor. The equipment positions are defined facility-specifically, and their cabling is carried out either under the raised floor or from grates above the equipment positions.

Basic+

The company rents a data center divided off from Telia's equipment station with a cage partition, which has the conditions provided by the equipment station at any one time. The size categories of the rental facility (caged space) are designed for 8 or 16 cabinets. The capacity

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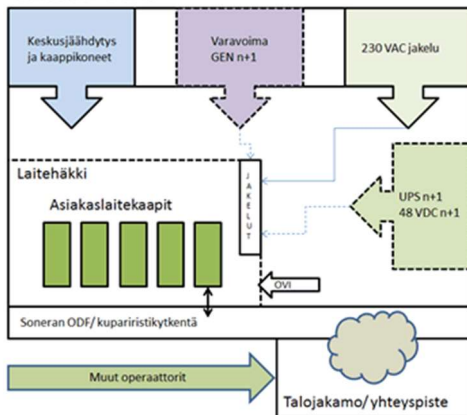
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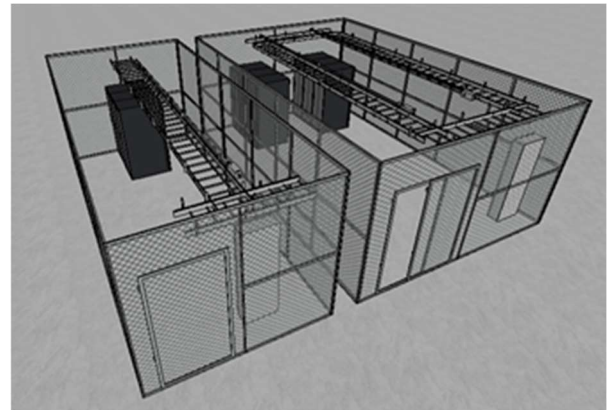
for cooling the customer devices is approximately 300 W/m². Access to the facility is prevented from outsiders, and the access door of the caged space is linked to access control.

Laitetila Basic+



The facility is delivered with an electricity distribution center equipped with standard fuses. Non-redundant 230 VAC electric power supply is connected to the distributions center with a meter measuring the consumption. Electrical power is charged from the company according to use. Making electric power redundant is offered and agreed on separately as needed. The electric power and cooling capacity of the data center is defined equipment station specifically.

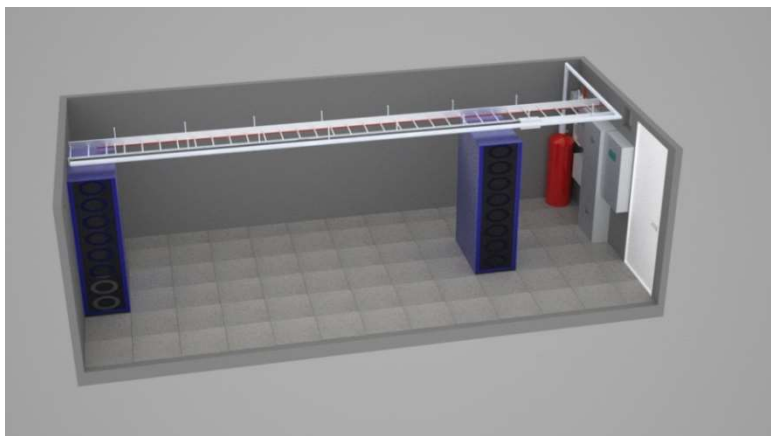
Telia's



standard delivery includes a fibre optic cable connection comprising 24 connections (single mode/SM) from Telia's ODF to the data center that the customer has rented (for more details, see section 1.2.5). The company can also itself take care of the furnishing of the data center and in-house network cabling, as separately agreed on.

The cages space can have a raised floor or basic floor. The equipment positions are defined facility-specifically, and their cabling is carried out either under the raised floor or from grates above the equipment positions, installed above the cabinet positions. Electric power distribution is also installed on the grates, in order to supply power to the equipment cabinets.

Premium



Separate server room space equipped with automatic functions has been set up in the equipment station facility, having e.g. its own fire-extinguishing system and room-specific differentiated cooling system. On facilities at the Premium level, a security level higher than the Basic level is reached.

The company rents the facility ready for use. It has the technical facilities for the customer's own cabinets, potential UPS system, and servers.

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Automated control protects the room from, for example, unauthorized access, burglary, fire, firefighting water, and combustion gas. The room automatically closes its ventilation ducts as a result of an external or internal alarm.

The maximum size of equipment cabinet positions is 600x1200x2000mm. Access to the facility is prevented from outsiders, and the access door to the server room facility is linked to access control.

The facility is equipped with a 250A distribution center. Non-redundant 230 VAC electric power supply is delivered to the distribution center with a meter measuring the consumption. Electric power is charged from the customer according to the consumption. Making electric power redundant is offered and agreed on separately as needed. The electric power and cooling capacity of the data center is defined equipment station specifically.

Telia's standard delivery includes a fibre optic cable connection comprising 24 connections (single mode/SM) from Telia's ODF to the data center that the customer has rented (for more details, see section 1.2.5). The company can also itself take care of the furnishing of the data center and in-house network cabling, as separately agreed on.

The facility has a raised floor with the height of 200-300 mm. The equipment positions are defined according to a dedicated plan and their cabling is carried out either under the raised floor or from grates above the equipment positions. A 125A power distributing busbar is also installed on the grates, in order to supply power to the equipment cabinets. The Premium server room is available in two categories Small or Large.

- Premium Small
A Small server room facility can accommodate the total of 8 server cabinets, one of which is reserved, if need be, for an UPS system and batteries. The facility is furnished with a gas fire extinguishing system and fire detectors. The cooling of the Small server room is delivered with two in-row coolers with the maximum cooling capacity of 100 kW.
- Premium Large
A Large server room facility can accommodate the total of 16 server cabinets, two of which are reserved, if need be, for an UPS system and batteries. The facility is furnished with a gas fire extinguishing system and fire detectors. The cooling of the Large server room is first delivered with two in-row coolers with the maximum cooling capacity of 100 kW.
The maximum cooling capacity of a Large server room is 200 kW by the use of four in-row coolers.

Premium+

Separate server room space equipped with automatic functions, set up in the equipment station facility, having e.g. its own fire-extinguishing system and room-specific differentiated cooling system. On facilities at the Premium level, a security level higher than the Basic level is reached.

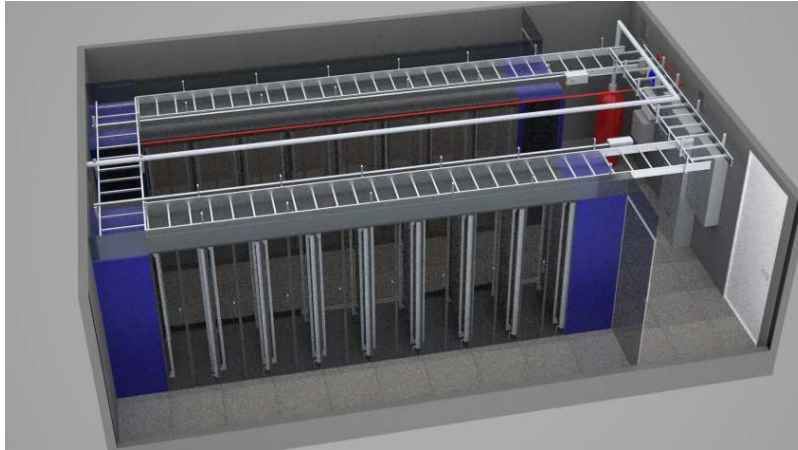
The Premium+ level provides the customer with the "ready to go" preparedness, in other words, the customer's devices can be installed in prepared server cabinets.

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The customer rents a fully ready-to-use server room facility from Telia, where the customer only needs to bring their own servers in pre-installed cabinets (600x1500x2000 mm). The server equipment room is delivered with its own automated control. The automated control protects the room from, for example, unauthorized access, burglary, fire, firefighting water, and combustion gas. The room automatically closes its ventilation ducts as a result of an external or internal alarm.

ter, and combustion gas. The room automatically closes its ventilation ducts as a result of an external or internal alarm.

The Premium+ facility is equipped with a hot aisle. Such a hot aisle boosts the cooling and energy-efficiency of the facility by separating cold and hot air from each other.

Access to the facility is prevented from outsiders, and the access door to the server room facility is linked to access control. The facility has web-based camera monitoring.

The facility is equipped with a 250A distribution center. Non-redundant 230 VAC electric power supply is delivered to the distribution center with a meter measuring the consumption. electric power is charged from the customer according to the consumption. Making electric power redundant is offered and agreed on separately as needed. The electric power and cooling capacity of the data center is defined equipment station specifically.

Telia's standard delivery includes a fibre optic cable connection comprising 24 connections (single mode/SM) from Telia's ODF to the data center that the customer has rented (for more details, see section 1.2.5). The company can also itself take care of the furnishing of the data center and in-house network cabling, as separately agreed on.

The facility has a raised floor with the height of 200-300 mm. The equipment positions are defined according to a dedicated plan and their cabling is carried out either under the raised floor or from grates above the equipment positions. A 125A power distributing busbar is also installed on the grates, in order to supply power to the equipment cabinets. The Premium+ server room is available in two categories Small or Large.

- Premium+ Small

A Small server room facility can accommodate the total of 8 server cabinets, one of which is reserved, if need be, for an UPS system and batteries. The facility is furnished with a gas fire extinguishing system and fire detectors. The cooling of the Small server room is delivered with two in-row coolers with the maximum cooling capacity of 100 kW.

- Premium+ Big

A Large facility can accommodate the total of 16 server cabinets, two of which are reserved, if need be, for an UPS system and batteries. The facility is furnished with a gas fire extinguishing system and fire detectors. The cooling of the Large server room is first delivered with two in-row coolers with the maximum cooling capacity of 100 kW. The maximum cooling capacity of a Large server room is 200 kW by the use of four in-row coolers.

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1.2.3 Access to the premises

Defining the access arrangements

The Finnish Communications Regulatory Authority's regulation "Viestintäverkkojen ja palvelujen varmistamisesta" TRAFICOM 54 B/2014 M, and Telia's safety instructions are followed as regards access to the premises.

Access control to the equipment station is under Telia's responsibility. Access is monitored with an electronic access control system. The access arrangements are agreed on with the company data center specifically.

Any changes the customer-specific access arrangements may cause to the lockup process or the access control system are charged as one-time charges.

Access control

The company designates to Telia, in writing, the persons who have access rights to the company's data centers. If the company is using a locked space, the company's persons will have, against payment, an electric key and Telia's ID card to access the premises.

Admission service

If the company requires controlled access to the premises for designated persons, Telia monitors access to the premises as well as working on the premises separately with the Admission service.

1.2.4 Electricity

Energy and transmission of electricity

The electric energy, transmission costs, as well as the related taxes are invoiced separately according to the actual costs.

Reserve power redundancy reservation (N+1 generator (GEN))

Includes the reservation to use a generator up until the reserved kilowatts. If, for example, a reservation is made in the rental data center for a 20 kW GEN redundancy, the full share of the reservation will be invoiced even if the use of electricity were lesser. The reservation includes, in addition to Telia's investment cost, fuel, operating hours of the reserve power machines, servicing, fault repair, 24 h control room, and test runs. The price excludes UPS devices, batteries, and other customer data center specific back-ups.

Additional redundancy reservation UPS

The customer's power supply is secured by means of Telia's devices as follows: UPS N+1, battery back-up, redundant power supply). The customer can also use its own additional redundancy equipment in the facility it has rented.

Additional redundancy reservation 48 VDC

The customer's power supply is secured by means of Telia's devices as follows: 48 VDC N+1, battery back-up, redundant power supply). The customer can also use its own additional redundancy equipment in the facility it has rented.

1.2.5 Cabling

Telia carries out the cabling work at the equipment station as needed, authorized by and in control of the party responsible for the data center facility. The customer can only carry out cabling in the data center it has rented.

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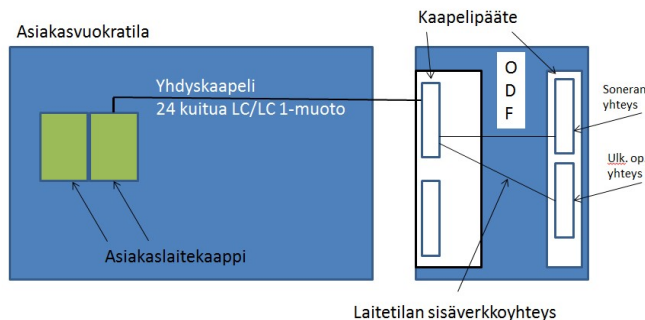
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Connection cable

The connections to be connected to the customer facility required a connection cable, which is terminated at the cable terminal of Telia's optical distribution frame (ODF). This cabling is always performed by Telia, which charges the actual costs from the customer. Telia's standard delivery includes a fibre optic cable carrying 24 connections. This cable is the fibre optic cable connection (single mode/SM) from Telia's ODF to the customer's rental space.



The customer rents the cable terminal from Telia. A delivery and monthly charge are collected for the cable terminal, to which connections delivered by Telia and external operators are connected. The in-house network connection of the data center, installed for the cable terminal involves a charge and is rented from Telia.

1.2.6 Facilities serving and maintenance

The maintenance of the facilities includes the following basic services:

- Facilities maintenance and annual repairs
- Maintenance and fault repair of facility technology equipment and power supply
- Property maintenance (ploughing, waste management, etc.)
- Overall on-site cleaning (each party takes care of its own installation waste)
- Tasks related to on-site security

1.2.7 Customer service

For problem situations related to the data centers, assistance from HelpDesk is available on the 24/7 principle. The company will have a customer ID for dealings with HelpDesk. Enquiries concerning data centers are answered by Operaattori-myynti@teliacompany.com (Operators) and fm@teliacompany.com (Corporate Clients).

1.3 Other matters

1.3.1 The customer's responsibilities

The customer pays a monthly charge for the data center and supplementary services, or other fees according to the agreement. The Customer is liable for any costs related to the installation and maintenance of its equipment, as well as for the costs of electric energy and transmission costs as set forth in section 1.2.4.

The Customer's equipment must not cause interference to Telia's equipment or any other equipment or functions within the same equipment station facility. In the event of any interference, the parties will immediately take measures to remedy the situation. The customer is responsible for damages caused by its equipment or its personnel or the operations or omissions by a third party operating on the customer's behalf, as well as damages caused by the keys, ID cards or similar supplied to be used by the renter being lost or ending up in the use of an external party. The customer is obliged to notify Telia immediately of possible loss of keys or ID cards.

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Installing and dismantling of equipment: The Customer's equipment must not cause interference to Telia's equipment or any other equipment or functions within the same equipment station facility. In the event of any interference, the parties will immediately take measures to remedy the situation. The customer is responsible for damages caused by its equipment or its personnel or the operations or omissions by a third party operating on the customer's behalf, as well as damages caused by the keys, ID cards or similar supplied to be used by the renter being lost or ending up in the use of an external party. The customer is obliged to notify Telia immediately of possible loss of keys or ID cards.

1.3.2 Data center specific rental agreements

The customer and Telia conclude a written rental agreement data center specifically. Each rental agreement is incorporated into the customer's Telia Safe data center service. All amendments and additions to the Agreements, except for changes to the contact information, prices, or delivery terms or changes required by the authorities, enter into force only when approved by both parties in writing.

If the customer makes changes to the equipment placed in the rental data center, which might affect the data center or related services (increasing the need for power or space, for instance), these changes must be agreed upon in advance with Telia. If the agreement level is found to have been exceeded, Telia has the right to collect a charge for the part exceeding the agreement level in arrears from the date on which the exceeding of the level started. If the start date of the exceeding cannot be verified between the parties, a charge can be collected for the part exceeding the agreement level for the past 12 months. An inspection fee can be collected from the customer (the costs it has incurred from the inspection), if it appears in measurements that the Customer has exceeded the usage level stated in the agreement.

The facilities are managed according to an implementation model for facilities technological services, made for managing Telia's production facilities, the parts of which are:

Site level

The cornerstone of site level service is the operative and physical production of disturbance-free production facilities service in every production facility belonging to the site. The site-level production facilities services include the following functions:

- Site managing
- Operating services
- Control center service
- 24h HelpDesk service
- Preventive maintenance
- Fault repair
- Investments

Site managing

The site manager is responsible for producing facility technical services according to Telia's instructions. The site manager is responsible for the operation of the entire premises and its cost-effective managing, and it is also the site manager's job to offer facility technical support for the users of the facilities. These include, for example, the managing and performing of measures caused by capacity changes insofar as facility technical systems are concerned.

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Operating services

The goal of operating services is the appropriate usability of the premises, whereby the conditions and safety of the production facilities according to the requirements can be ensured.

The basis of operating services is a building automation system than can be managed remotely, allowing alarms as wells as remote view and management for the systems of the site. The site-specific operative functioning of operating services is guaranteed by maintenance workers who are well-acquainted with the site and who are responsible for the appropriate condition of the production facilities by making the visiting rounds, tests, and minor repairs. The most important actions are entered in the usage diary of the maintenance manual system.

Control center services

Telia's equipment stations are connected with a controlled telecommunications connection to a centralized control center, operating on Telia's security-classified premises. The control center is staffed 24 h/day. When an alarm is received, the control center checks its severity and calls out the on-duty maintenance worker. The alarms have been categorized into four levels, of which the critical faults are responded to in 3 hours.

Depending on the scale and degree of criticalness of the fault, the control center escalates the information to Telia's network control and control of the customer network. As fault repair is progressing, the control center sends a progress report to the network control centers and cooperates with them.

24h HelpDesk service

HelpDesk acts as the reception point of requests for action and observations concerning the facilities and directs work requests to be dealt with the appropriate actor. The realization of the work requests is monitored and the actions are reported to the party who ordered the work and the site manager. Communication takes place by e-mail or phone.

Preventive maintenance

The following systems are within the scope of preventive maintenance:

- Reserve power equipment
- UPSs
- Cooling
- Conditions monitoring
- Electric systems
- Ventilation
- Fire alarm system
- Sampling systems
- Camera and alarm systems
- Access control systems

In addition, Telia carries out regular check rounds to ensure the proper condition of the alarm points, operation of the groundwater pumping stations, and the roof and facade structures.

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Fault repair service

The goal of fault repair is to restore the production facilities as soon as possible to the normal, trouble-free state. Most of the fault repair cases are not directly reflected on production. Sudden failures are divided into four urgency categories:

- A0 = 3 hour response time
- A1 = 5,5 hour response time
- A2 = next business day
- A3 = next business week

Critical repairs outside of the normal working hours are taken care of by the on-duty installation engineer. The tasks have been divided according to professional skills, whereby technical repair for HPAC and power equipment are performed by different people.

Investment management

A long-term plan is drafted for the site, defining the forthcoming, known repair projects. The site manager is responsible for leading the investments, taking into account the needs of the users and the real estate and facilities unit. Some of the investment needs are created by the changes in the capacity or, for example, security level, as required by the user.

1.3.3 Changes in the service description

Telia may amend this service description. If the service description is changed substantially to the customer's detriment, the customer must be notified of the change at least one month prior to the entry into force of the change. In other cases, Telia will inform the customer of the changes in the manner and schedule it considers appropriate.