

ANNEX TO THE RULES FOR THE PROVISION OF THE SERVER AND SYSTEM MAINTENANCE SERVICE NO. 1

TECHNICAL FUNCTIONALITIES OF SERVICE COMPONENTS

Component functionality

Maintenance of server, storage and network hardware (HW)	
- Initial installation of the HW in the DC cabinet of Customer or Telia, installation and replacement of components; - Connection, switching, labelling of physical interfaces of the HW; - Connection, configuration of remote control; - Configuration of HW functional parameters (RAID, etc.) at BIOS (Basic Input Output System) level; - Administration of user logins to the HW control panel; - Monitoring of critical HW performance and resource load parameters; - Request resolution, fault identification, logging, diagnosis and troubleshooting; - Arranging repair and replacement of HW components; - Representation of the Customer in dealing with the HW manufacturer on maintenance issues; - Periodic updating of HW management firmware at a time agreed with the Client;	
Maintenance of the data storage area (SAN)	
- Creation, configuration and assignment of disk aggregation arrays, disk partitions, logical disks to service stations; - Configuring data redistribution between different types of disk media; - Periodic updating of storage management firmware, controllers, micro-service code for disks up to 2 times a year; - Monitoring of critical and performance parameters of the storage system; - Monitoring of critical and performance parameters of the data warehouse; - Fault identification, logging, diagnosis and resolution; - Organisation of repairs and replacements of the data warehouse and its hardware components (1 visit per year); - Representation of the client in the data warehouse manufacturer's support and other systems. - Performance testing of the data warehouse to solve the problem; - Data replication - Analysis of data warehouse technical resources and performance, providing periodic reports, recommendations, proposals to resolve problems or up to 1 time per year according to the Customer's request.	
Maintenance of the virtualisation platform server	
- Setting up integration with MS Active Directory service and changing certificates; - Configuration of the High Availability (HA) feature of the software; - Configuration and maintenance of the platform's functional services; - Creation, configuration, deletion of virtual servers; - Creating, configuring and assigning virtual networks to virtual servers; - Configuration of standard security settings for virtualisation software (VMware, Hyper-V, KVM); - Installation of system patches up to 2 times a year;	
Maintenance of Windows OS	
- Initial installation and configuration of the Operating System; - Installation, upgrade of server hardware and/or virtual resource management drivers; - Initial configuration and operation of Operating System Services; - Installation and configuration of the standard Microsoft Antivirus software; - Configuration of the integrated OS firewall and its advanced features; - Maintenance of a standard virtual firewall (Telia Cloud Computing (vCloud) Service Customers only) - Management of system user accounts, access rights; - Configuration of OS performance monitoring; - Monitoring of critical and performance parameters of OS operation; - Analysis of the resources managed by the operating system, their performance, providing recommendations and suggestions; - Deployment of Service Packs, Updates and Patches on a coordinated preventive maintenance schedule; (Windows OS version changes (e.g. from Windows Server 2019 to Windows Server 2022) are considered additional work.) - Fault identification, logging, diagnosis and troubleshooting (restoring the system to its pre-failure state); - Archiving *.temp, *.log files, deleting them when the server's free space is decreasing;	
Maintenance of Windows OS roles and services	
Maintenance of Windows File Server	Maintenance of Windows Print Server
- Initial installation of Microsoft File Server; - Configuration of Microsoft File Server; - Configuration of the security groups (ACLs) settings; - Installation and configuration of services supporting the File Server; - Management of shared folders; - Management of rights and permission sets for access to shared folders;	- Initial installation of Microsoft Print Server; - Configuration of Microsoft Print Server; - Configuration of printer usage rights; - Managing the services that support the print server; - Administration of the print queue management service; - Installing updates; - Implementation and customisation of service monitoring.

• Deployment of updates; • Deployment and customisation of Service Monitoring.	
Maintenance of Windows Terminal Server	Maintenance of Windows Routing and Remote Access Server
• Initial installation of Microsoft Terminal Server; • Configuration of Microsoft Terminal Server; • Management of Microsoft Terminal Server Support Services; • Activation, modification and removal of RDS licences held by the customer or ordered from Telia; • Management of the service sessions of Microsoft Remote Desktop Service; • Installation of updates; • Installation and customisation of service monitoring.	• Initial installation of Microsoft NPAS (network policy and access services) server; • Configuration of the Microsoft NPAS server; • Configuration of the Network access policies; • Management of services supporting MS NPAS server; • Initial configuration of MS NPAS users, groups, access rights, and access sets; • Installation of updates; • Service monitoring deployment and customisation.
Maintenance of Windows Internet Service (IIS)	
• Initial installation of Microsoft iInternet Server (IIS); • Configuration of the web server (IIS); • Monitoring the operational status of IIS application pools; • Installation of updates; • Implementation and customisation of Service Monitoring.	
Maintenance of Windows Exchange Server	
• Administration of changes in users (mailboxes); • Exchange database creation, removal, migration of mailboxes between databases; • Administration of distribution list permits; • Configuration of recipients, system policies, address forms; • Configuration of mail network gateways; • Analysis of the situation of undelivered mail and troubleshooting of problems (up to 12 times a year); • Monitoring of mail queues • Configuration of SMTP (Simple Mail Transfer Protocol) records; • Removing Exchange database fragmentation in stand-alone mode by removing large amounts of data from the Exchange database (in case of customer negligence, may be considered as additional work); • Installation of updates; • Installation and customisation of Service monitoring; • Management of mail security measures shall not be part of the Service.	
<u>Maintenance of Windows Active Directory (maintenance of Active Directory)</u>	
• Initial installation of the role; • Configuration of the password security settings; • Management of organisational units, groups, users and computer accounts (up to 1 hour/month); • Configuration of user account management policy settings (up to 1 hour/month); • Ensuring access rights of user accounts to domain resources; • Group Policy Management: creation, configuration, administration (up to 1 hour/month); • Configuration of remote sites; • Configuration of trusts between management servers, ensuring data synchronisation; • Expansion of the Active Directory with new domain management servers; • Changing the functional level of the Active Directory. • Monitoring of Active Directory activity, analysis of the event log; • Defragmentation of the Active Directory database in case of failure; • Restoring the functionality of the Active Directory after a management server failure.	
Maintenance of Windows DHCP Server	Maintenance of Windows DNS Server
• Installation of DHCP server; • Configuration of DHCP server settings; • Management of DHCP serviced network subnets, IP address frames; • Administration of DHCP list; • Monitoring DHCP server performance; • Restoring functionality after DHCP server failure.	• Installation of DNS server; • Configuration of DNS server settings; • Management of domain name: creation, configuration, administration; • Management of DNS records: creation, configuration, administration; • Configuration of inter-connection between related DNS servers, ensuring synchronisation of records; • Monitoring of DNS server performance; • Restoring functionality after a DNS server failure
Maintenance of Windows CA Server (maintenance of the Certificate Authority)	

• Installation of the Certificate Authority (CA) • Configuration of the Certificate Authority settings; • Creation and configuration of certificate templates; • Administration of the Certificate Authority database; • Certificate lifecycle management; • Deployment of created certificates; • Monitoring of Certificate Authority activities; • Restoring functionality after a Certificate Authority server failure.	
Maintenance of Microsoft SQL Server	
Standard maintenance • Installation, configuration, deletion of MS SQL software (according to defined and agreed needs); • Configuration of MS SQL initial settings, user and administrator rights; • When Telia takes over a database on an existing platform, it is subject to a full audit, i.e. version checking and compatibility, OS and MS SQL event log analysis. • Development of audit recommendations • Installation, configuration (once) of MS SQL monitoring agents, adapting standard monitoring templates • Management of user accounts, access rights; • Index defragmentations, database integrity check according to manufacturer's recommendations; • Management of MS SQL Services, Analysis services, Reporting services, Integration services; • Installation of updates and patches within the same version of MS SQL and OS Server (only manufacturer's recommended or critical); • Analysing problems and initiating improvement actions; • Ensuring business continuity of MS SQL DBMS; • Performing database backups using Microsoft SQL, MS SQL copy encryption, administration, monitoring and verification of backup integrity.	
Maintenance of the Application and Middleware	
• Ensuring the continuous operation of the Application and the Middleware. Corrective and preventive maintenance of different Application environments. • Continuous monitoring of critical parameters of the Application and the Middleware and reacting to events detected by the monitoring. • Possibility to configure and monitor specific Application triggers according to the Customer's request. • Resolution of Customer queries and incidents according to agreed SLA (Service does not cover end-user queries service). • Management of access rights and roles in the Application or related databases. • Periodic patch and bugfix deployment of Application and the Middleware updates according to the Customer's requirements and plan. • Remediation of security gaps, vulnerabilities in accordance with vulnerability reports provided by the Customer or vulnerability scanning service reports provided by Telia. • Deployment automation and monitoring of Application updates, new deployments; • Deployment and monitoring of SSL certificates; • Collaboration with the manufacturers and development teams of the Application and the Middleware to plan changes, resolve incidents or Application development.	
Maintenance of Linux OS	
• Installation and configuration of the Operating System; • Configuration and running of Daemons of the Operating System; • Installing and updating server hardware and/or virtual resource management drivers; • OS security management, in accordance with the recommendations of the software vendors and Telia, and best practices good practices; • Management of system user accounts and access rights; • Installation and configuration of OS performance monitoring, backup agents; • Monitoring of critical and performance parameters of OS operation; • Analysis of OS managed resources, their performance, providing recommendations, suggestions; • Installing OS kernel and software package updates and patches on a coordinated schedule of preventive work; (Linux OS version changes (e.g. from CentOS 6 to CentOS 7) are considered Additional Works) • Fault identification, logging, diagnosis and troubleshooting (restoring the system to its pre-failure state); • Archiving *.log files, deleting them when the server's free space is reduced; • Restoration of the operating system after a hardware or software failure of the server	
Maintenance of Linux email services	
• Installation of the required set of Services (IMAP, POP3, SMTP, SMTP relay); • Configuration of the required Service Pack (IMAP, POP3, SMTP, SMTP relay); • Setting up a standard set of anti-virus and anti-spam configurations in standard junks; • Managing the white list and the spam list; • Analysis of log files; • Installing updates; • Installation and customisation of Service Monitoring	

Maintenance of Linux Website Services (LAMP)
• Maintenance of Linux OS (as described above) • Installation of the web service (Apache or Nginx) from manufacturer's sources. In case of need for a specific web version, the Customer must inform Telia by naming the version number required. The desired version must be officially supported by the manufacturer; • Installation and configuration of PHP and other web service modules from sources provided by the manufacturer; • Maintenance of the MySQL database (described below)- Maintenance of the file system; • Creating and removing virtual sites, users, rights management; • SSL certificate configuration; • SSL certificate installation and CSR generation; • Analysis of event logs; • Installation of updates; • Configuration of server and system monitoring service.
Maintenance of Linux database (MySQL, MongoDB, MariaDB)
• Installation of database from manufacturer's sources; • Development of databases and its users; • Initial configuration of the database, database parameters (initial settings, restrictions), security settings (database accessed via local port unless otherwise specified); • Analysis of event logs • Analysis of slow requests; • Management of user rights; • Changing initial settings: session and database settings; • Installing updates; • Deployment and customisation of Service Monitoring; • Execution of database backups (except for MongoDB) using DB integrated tools, administration, monitoring and verification of the integrity of the backup;
Maintenance of Linux Squid (Squid proxy server)
• Installation of the proxy server from the manufacturer's sources; • Adaptation of the configuration of the proxy server to the Customer's usage needs; • Event log analysis (additional work); • Creation of additional access control rules (ACLs) and groups of ACLs without changing the original configuration (Additional Works); • Installation of updates; • Implementation and customisation of Service monitoring.
Maintenance of Oracle DB
• Initial installation of database management software from manufacturer-supplied sources or checking and recommending existing databases; • Creation and commissioning of databases (without creating a DB cluster); • Configuring databases, assigning users and administrators; • Problem analysis and initiation of improvement actions (Must have a valid manufacturer's support contract); • Managing the destruction of databases; • Installing updates within the same database version (Must have a valid manufacturer's support contract); • Implementation and customisation of service monitoring • Backup management with Oracle tools (storage to be ordered separately)
Maintenance of Telia Call Centre Service
• Implementation of Telia Call Centre Service Pack; • Installation of software updates and bug fixes; • Adding, editing and configuring agent, user and rights, settings (Additional Works); • Adding and editing queues (Additional Works); • Firewall configuration (Additional Works); • Editing the time card (Additional Works); • IVR editing (Additional Works); • Audio recording (Additional Works); • Adding and editing a telephone number (Additional Works); • Other works on special request (Additional Works); • Installation and customisation of service monitoring; • Backup management. During the provision of the Service, the Customer shall be granted a non-exclusive right to use the software of Telia Call Centre for provision of the Service. Intellectual property rights in the software of Telia Call Centre Service, applications, technical documentation provided by Telia to the Customer at the time of installation or provision of the Service shall remain vested in Telia or its licensors, without the right to copy, modify or transfer to third parties.