**ტექნიკური დავალება**

**Software requirements for backup, replication, and recovery.**

This project requires the delivery of licenses to perform backup, replication, and restore tasks.

**Supported Backup Platforms**

**Virtual Infrastructure Support:**

* Support for virtual infrastructure backup based on VMware vSphere 5.5 and above, including VMware vSphere 7.0 U1, VMware Ready for vSAN certified;
* Support for copying a virtual infrastructure based on the Microsoft Hyper-V platform starting with Windows Server 2008 R2 SP1 and above, including Microsoft Hyper-V 2019 and support for 64 TB VHDX;
* Support for backup of virtual infrastructure based on the Nutanix AHV platform, starting from AHV version 5.5.x and above, including 5.19.x;
* Support for backing up of vApp containers, VMs and their metadata, and restoring them directly to the vCloud Director infrastructure.
* Support for task automation and self-service portal for VMware vCloud Director

**Operating systems support:**

* Backup of desktop systems with installed Microsoft Windows 7 SP1 and above;
* Backup of server systems with installed Microsoft Windows Server 2008 R2 SP1 and higher;
* Backup of systems with OC Linux installed based on Debian 9 and above, Ubuntu 14.04 and above, CentOS 7.0 and above, RHEL 6.0 above, Oracle Linux 6 and above, Fedora 32 and above, openSUSE 15.2, SLES 11 SP4 and above;
* Backup of systems with OC IBM AIX 6.1 and above, Oracle Solaris 10-11.4 SPARC and Oracle Solaris 10-11.4 x86 installed;
* Back up of systems with MAC OS installed: Big Sur 11.X.X, Catalina 10.15.X, Mojave 10.14.X, and High Sierra 10.13.6

**Common functionality of the backup platform:**

* The backup platform must have a distributed and scale-out backup architecture;
* The backup platform must be able to back itself using built-in backup and restore the settings;
* The backup platform must provide Rest API for remote configuration and management;
* The backup platform must ensure that the central management server is used as a license distribution server;

**Backup functionality**

**Back up virtual machines:**

* The backup platform must provide the ability to back up VMs at the image level, with the ability to copy only changed blocks and with the preservation of application state, as well as without installing specialized applications or agents inside of the VM;
* The backup platform must support the transfer of backups over both the transmission network and the SAN, including VM backups directly from NFS storage;
* The backup platform should support a mechanism for automatically changing the speed of the backup process with increasing read response time on all storage systems, with the ability to determine response time thresholds;
* The backup platform must have a mechanism for deduplication and compression of backups "on the fly", the ability to exclude blocks of OS service files, as well as folders and files specified by the user, to speed up the backup process, as well as to reduce the amount of data stored;
* The backup platform must be able to use hardware snapshots of the storage for backup, with the ability to ensure the integrity of applications within virtual machines. Interaction should be implemented using specialized APIs at the storage level and without installing additional software on them;

**Verification of the integrity and ability to restore virtual machine backups:**

* The backup platform must be able to create an isolated environment on the Customer's productive infrastructure, with the ability to use it for automatic testing of backups or to create test zones;
* The backup platform must be able to automatically test the health of VM backups. Validation should be performed by running associated virtual machines from backups and/or hardware snapshots of the storage in an isolated environment on a schedule, with the ability to test the health of applications and services within the VM form backup. It should be possible to use both built-in verification scripts and the ability to use your own scripts;

**Backing up physical systems:**

* The backup platform must provide the ability to back up the OS at the image level, at the volume level, as well as at the individual file level, while maintaining the state of applications;
* The backup platform must support the ability to use hardware snapshots of the storage as a source for backing up volumes from machines running MS Windows Server. Interoperability should be implemented using specialized APIs at the storage level;
* The backup platform must provide the ability to copy only the changed blocks, to reduce the transmitted data;
* The backup platform must have the ability to back up to the local cache, in case of unavailability of the target device for backup, followed by automatic transfer of data from the cache to the target device, when restoring access to this target device;
* The backup platform must implement a mechanism for integration with applications running on the server with the ability to interact with transactional logs of systems such as Microsoft Exchange, Microsoft SQL Server and Oracle database;
* The backup platform must support backup of Microsoft Clustering Service;
* The backup platform must support the ability to create periodic synthetic full backups
* The backup platform must support the ability to create periodic active full backups within an existing backup job;
* The backup platform must provide system backups with consistent state of applications such as PostgreSQL and MySQL;

**Backing up of network resources:**

* The backup platform must provide the ability to back up network resources shared over SMB (including SMB v3) or NFS (including NFS v4.1);
* The backup platform must support the ability to create VSS snapshots when backing up data using the SMB v3 protocol, to ensure consistency;
* The backup platform must have the functionality of storing historical versions of files, with the ability to upload the oldest versions to secondary backup storage;
* The backup platform must support the ability to use hardware snapshots of storage as a source for backing up file shares to avoid the limitations of file locks. Interaction should be implemented using specialized APIs at the storage level and without installing additional software on them;

**Storing of backups**

**Storing virtual machine backups:**

* The backup platform must integrate with specialized backup storage solutions (disk storage deduplication devices): EMC DataDomain over DDBoost, HPE StoreOnce over Catalyst, and Quantum DXi, ExaGrid and Fujitsu;
* The backup platform must be able to encrypt backups;
* The backup platform must be able to integrate with Linux-based machines to be used as secure backup stores that allow you to set a data immutability setting that provides protection against deletion and modification of backup data blocks for a specified period;
* The backup platform should be able to combine different physical storage into a logically single, scalable backup storage pool to combine the available space of individual storage systems;
* The backup platform must be able to move backups to object storage devices or services based on the AWS S3/S3-compliant/Azure Blob/Google Cloud Storage API protocol. Data should be moved both after reaching a certain storage time and by duplicating data;
* The backup platform must be able to move backups from AWS/Azure object storage within a single logical, scalable pool to an additional archive tier based on Amazon S3 Glacier/Azure Archival Storage. Data should be moved after reaching a certain data retention time;
* The backup platform must be able to transfer backups between different repositories with the ability to specify a new storage depth for the backup;
* When transferring backups between storages, the backup platform should be able to re-transfer backups between sites using compression mechanisms and global traffic deduplication, and caching information on both sites on specialized servers;
* The backup platform must support backup to tape libraries, including multithreaded recording, the ability to pool tape drives from different tape libraries;
* The backup platform should be able to generate a synthetic full backups when writing to tape from the full backup and incremental backups available in the disk storage without creating a temporary synthetic full copy on disk;

**Storing backups of physical machines:**

* The backup platform must maintain backup retention policies based on the days of operation of the protected physical machine;
* The backup platform must implement the ability to save backups to Microsoft OneDrive Business and Personal cloud storage with the ability to perform Bare-Metal recovery directly from the storage point;
* The backup platform must support the following backup storage targets: local drives, removable USB drives, network shares;
* The backup platform must provide the ability to archive backup copies of physical machines to tape media, with the possibility of subsequent recovery;

**Virtual machine replication and disaster recovery functionality:**

* The backup platform must support direct replication of virtual machines for Microsoft Hyper-V and VMware vSphere platforms, without the use of intermediate backups, with the ability to ensure the creation of multiple restore points and the transfer of only changed blocks;
* The backup platform must ensure the integrity of applications within the VM during replication, without installing specialized applications inside the VM;
* When replicating VMs between storages, the backup platform must be able to re-transfer replicas between sites using compression and global traffic deduplication mechanisms, and caching information on both sites on specialized servers;
* The backup platform must provide switching to a replicated virtual machine with the ability to automatically change the IP address;
* The backup platform must ensure that the replicated virtual machine is switched to even if the backup server is lost;

**Verifying of the integrity and recoverability of replicated virtual machines:**

* The backup platform must be able to automatically test the health of VM replicas. Validation should be performed by running linked virtual machines from replicas in an isolated environment on a schedule, with the ability to test the health of applications and services within the VM. It should be possible to use both built-in validation scripts and the ability to use your own scripts;

**Continuous Replication and Disaster Recovery Functionality for VMware vSphere Virtual Machines:**

* The backup platform must support continuous replication of VMware vSphere virtual machines, without the use of virtualization snapshots, ensuring minimal data loss within 2 seconds;
* The platform must continuously replicate the I/O operations of virtual machines and store them in a special log on the target datastore for several hours specified in the short-term retention policy to ensure that the VM can be restored to a certain point in time with a specified step;
* The platform must be able to create additional VM recovery points that go beyond the replication policy, considering the state of the running inside the application and ensuring their consistency, without installing specialized applications inside the VM.

**Restore functionality from a backup**

**Restore data from virtual machine backups:**

The backup platform must support the ability to restore from backups even in the event of a complete loss of the backup server;

The backup platform must support the recovery of virtual machines, as well as individual virtual disks, and configuration files. Recovery should take place both over the transmission network and over the storage area network;

The backup platform must allow virtual machines to run instantly directly from the backup store, for both the VMware vSphere platform and the Microsoft Hyper-V platform. With the ability to subsequently move the virtual machine to the selected data store without interruption. This technology should also be supported for specialized deduplicating storage systems;

The backup platform must allow you to restore from a backup directly to Microsoft Azure/Amazon EC as a virtual machine;

The backup platform must provide the ability to pre-scan anti-virus and check backups during recovery;

The backup platform must provide the ability to delete data from that VM without deleting that data from the backup before restoring the VM to a production infrastructure;

The backup platform must implement granular recovery of application data from backups, to an intermediate and/or original location without installing a specialized agent;

The backup platform must implement granular recovery of Oracle databases on Windows and Linux (with support for ASM technology), including the ability to restore data to a specific transaction, to an intermediate and / or original location without installing a specialized agent. The solution must be certified under the Oracle Backup Solutions Program (BSP) <http://www.oracle.com/technetwork/database/availability/bsp-088814.html>;

The backup platform must provide the ability to instantly start and then restore MS SQL and Oracle databases from a backup at a certain point in time to a server or cluster of databases. The startup should be performed without first extracting data from the backup. It should also be possible to copy database files to the target location in parallel, synchronize changes and then switch;

The backup platform must provide the ability to delegate application objects from a backup to users through the Web portal;

**Restore data from physical systems backups:**

* The backup platform must support data recovery at the OS image level, volume level, file system object level;
* The backup platform must provide the ability to restore the entire system to physical machines in bare-metal mode, as well as to the target system with a different hardware configuration;
* The backup platform must provide the ability to restore backups to a physical computer with larger or smaller disks;
* The backup platform must ensure the creation of a universal failover boot media for physical machines used for recovery purposes;
* The backup platform must provide the ability to convert and export backup copies of physical computers in the form of virtual machine disks of Microsoft Hyper-V and VMware vSphere virtualization platforms;
* The backup platform must provide the ability to instantly start a virtual machine from a backup created from a physical system running MS Windows or Linux in Microsoft Hyper-V and VMware vSphere virtualization environments. The startup should be done without retrieving data from the backup. It should also be possible to migrate a running virtual machine in instant startup mode to production storage systems without interruption;
* The backup platform must allow recovery from a backup of a physical machine or server directly to Microsoft Azure/Amazon EC as a virtual machine, using both a stand-alone solution and a centralized management console;
* The backup platform must ensure application integrity and implement granular recovery of application data from backups, to an intermediate and/or original location;
* The backup platform must provide the ability to instantly start and then restore MS SQL and Oracle databases from a backup created from a physical system at a certain point in time to a physical/virtual server or database cluster. The startup should be performed without first extracting data from the backup. you must also be able to copy the database files to the target location in parallel in the background, synchronize the changes, and then switch them

**Restore data from network backups:**

* The backup platform must have several recovery modes: the entire network resource, individual files and folders, only modified files at a certain point in time;
* The backup platform must provide the ability to select the historical version of the file during recovery;
* The backup platform must provide the ability to instantly restore file shares by publishing them to a backup server with SMB access at a certain point in time in read-only mode;

**This project requires the supply of software licenses to perform monitoring, load planning and accounting for the virtual infrastructure, as well as the backup platform.**

**Requirements for monitoring, planning, reporting, virtualization environment and backup platform features.**

**General requirements:**

* Support for VMware vSphere virtualization platform in the field of monitoring and load planning;
* Collection of performance statistics from the backup platform;
* Possibility of installation on a standard OS, which is purchased separately;
* Availability of a built-in knowledge base containing comprehensive information about common problems of the virtual infrastructure and backup platform;
* Simulation of alerts when performance thresholds change, without applying these values;
* Combine virtual machines, hosts or storages into logical groups according to any specified specialized criteria: service, department, city, cost center, etc.;

Requirements for virtual infrastructure monitoring features:

* Monitoring of I/O operations (individually and in total), to each storage, from each virtual machine or virtualization host;
* Monitor read and write latency, to each storage, from each virtual machine or virtualization host;
* Monitoring the status of RAM, processors and network interfaces taking into account specialized virtualization metrics;

**Requirements for backup infrastructure monitoring features:**

* Monitoring the performance of backup components over CPU, RAM, disk subsystem and data network;
* Displays the status of all components of the backup platform. The status of backup and replication tasks;

**Requirements for Virtual Infrastructure Load Planning and Accounting Features**

* Evaluation of the most and least loaded hosts and virtual machines;
* Ability to regularly receive customizable reports on the performance of hosts and machines in various formats;
* Prediction of the load of hosts and machines based on historical data;
* Receiving reports containing information about resources redundant to virtual machines;
* Providing recommendations for planning and expanding the virtual infrastructure for any given period in the future;
* Preparation of a report on changes that have occurred in the virtual infrastructure for any period of time;
* Prepare reports showing the change in the load on the servers in the cluster when one or more of them fail. Receiving recommendations;
* Simulation of adding new virtual machines and calculating the change in the load on the virtual infrastructure cluster;
* Create a diagram of the dependencies of virtual infrastructure objects and upload the report in Microsoft Visio format;

**Requirements for Backup Platform Load Planning and Accounting Features**

* Providing a report on systems that are in backups, but not included in backup jobs;
* Ability to track changes in backup and replication job settings;
* Forecasting the growth of backups based on historical data;
* Reporting VMs that do not meet the minimum number of backups;
* Ability to track recovery operations by authorized users (the user who started the recovery and which objects were restored);
* Providing a report on systems that are present in several jobs;

**Support, backup upgrade and subscription requirements**

Software license must include 1Y support;

**Technical support of the software must:**

* Include the ability to update to new versions of the software of the same edition;
* Be provided 24 hours, 7 days a week, 365 days a year;

**Project Scope:** 250 / 300 / 350 – VM

**ინფორმაცია მიწოდების ვადის შესახებ:**

**ინფორმაცია ანგარიშსწორების პირობის შესახებ:**

პრეტენდენტის ხელმოწერა: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_