

1 Managed Operating System

- 1.1 Overview of Service
- This service provides configuration, monitoring and management of Windows and Linux operating systems hosted on physical and virtual servers in the cloud, or in the Client's on-premises or colocation data center.
- 1.2 Client Responsibilities
- (a) Except in cases where the operating system is provided by NTT, Client is responsible for operating system licensing.

(b) Client must be in possession of an active hardware service for the servers running the operating systems (if physical infrastructure exists).

(c) Client is responsible for removal of Client domain or IPs from an ISP Grey or Black List as a result of bulk email-sending.
- 1.3 Service Specific Operations
- (a) Monitors

The following monitors can be configured by default:

Monitor	Description	Alert	Performance Info
Ping / Network	Response time of a ping and packet loss from a poler	Yes	Graphs for round trip time and packet loss
CPU	CPU use of the server, differentiating between user, system, iowait	Yes	Graphs for each of the CPU uses
System Load (Linux)	Uptime of the server with the associated system load for the last 1, 5 and 15 minutes	Yes	Graphs for each of the system load measurements
Memory	Memory use of the server, covering both physical memory (system, shared, buffer, etc.) and swap	Yes	Graphs for each of the RAM uses
Disk (for each)	Disk usage in % Node usage (Linux)	Yes	Graphs for each of the parameters measured over time
System Processes (Linux)	Existence of the following key system processes: syslog, ssh	Yes	N/A
System Processes (Windows)	Existence of the following key system processes: Remote Desktop Service, WorkStation, and DNS client	Yes	N/A
Agents	Antivirus and Backup agents are running	Yes	N/A

The following monitors can be implemented at the Client's request.

Monitor	Description	Alerts	Performance Info	Alert Resolution
URL	Download of a given URL (with parameters and certificates) with checking of the returned content against some text and response times	Yes	Graphs for the response time of the URL	Escalation to the Client, with information about the error generating the URL alert, the returned text and the associated thresholds (unless web server management is contracted)
Process	Existence of a process or a group of processes running on the server	Yes	Graphs of the number of processes running	Engineering Teams will attempt to diagnose, try to solve the issue and escalate back to the Client if needed with information about which process(es) are failing and the associated thresholds

Alerts related to elements not under NTT management (e.g., applications not under management) will be escalated to the Client.

(b) Service Requests

As part of the Service, the fulfilment of the following types of requests are included:

Task	Description
Creation of users/groups	Creation of users and groups in the system, including the change of home directories, group assignment, shell and password maintenance

Management of network interfaces	Management and changes in the network interfaces included in the OS
Management of the DNS service	Creation, change and deletion of forward and reverse DNS entries related the server
Management of the CIFS Server (File Sharing)	Windows: Sharing of CIFS volumes, acting like a server, with the security configuration required Linux: Exporting of SMB/CIFS shares, acting like a server, with the right set of configuration settings and the required changes to the smb.conf file to persist
Management of the SMB/CIFS Client	Linux: Mounting and unmounting of SMB/CIFS shares on the server, with the right set of configuration settings and the required changes to the fstab configuration file
Management of the NFS Client	Linux: Mounting and unmounting of NFS shares on the server, with the right set of configuration settings and the required changes to the fstab configuration file
Management of the NFS Server	Linux: Exporting of NFS shares, acting like a server, with the right set of configuration settings and the required changes to the exportfs file to persist
Application of permissions and user rights	Implementation of user rights and permissions to the files on the server to provide a secure environment
Delegation of permissions (sudo)	Linux: Implementation of sudo policy rules to allow non privileged users to perform some privileged tasks while logging all this activity
Log subsystem configuration (rotation, purge, archive)	Configuration of log rotation, purging and archiving policies for: . Windows: the standard OS Facilities (Application, Security, System) or for standard components (IIS, FTP, SMTP) . Linux: the standard daemons in the system
Management of components	Windows: Installation and updating of system components that can only be installed or updated using Administrator privileges; these components can implement additional services like IIS and FTP, but the management of those applications is out of scope. NTT will only install the binary so that it can be executed. Additional configuration of the installed software, or problem solving will require additional charges.
Management of packages	Linux: Installation and updating of system packages. These packages can implement additional services like Apache and MySQL, but the management of those applications is out of scope. Additional configuration of the installed software will require additional charges.
Management of files and disk space	Evaluation and study of actions for freeing and optimizing disk space
Management of disks and partitioning	Addition and removal of disks and partitions on the server with further configuration of security levels and different features
Restore of data	Restore files from the backup policy to either the original location or a secondary location for further verification
Management of services	Windows: Changes to the startup settings of the system services, enabling and disabling them at the Client's request and configuring automatic restart for possible failures Linux: Changes to the init levels of the system daemons, enabling and disabling them at Client request
Scheduled Tasks management	Creation and management of scheduled tasks, configuring the frequency, security environment and specific task to execute
Support case management with the software provider	In case there is an issue with the operating system and the Client requires NTT to open a support case with Microsoft, RedHat or the vendor, NTT will perform those tasks and relay the requested information between the two parties. If the Linux version is supported by the community, best effort support is provided.
License renewal process management	Management of the renewal of the license from Microsoft, RedHat or other if available and contracted through NTT
Certificates	Windows: Microsoft certificate authority . Install . Configure

	Certificates . Install . Renewal . Lifecycle for internal or for third-party certificate authorities (not including the costs of the certificate at the third party)
Application of permissions and user rights	Implementation of user rights and permissions to the files in the server to provide a secure environment
Log subsystem configuration (rotation, purge, archive)	Configuration of log rotation, purging and archiving policies for the standard daemons in the system
Management of packages	Installation and updating of system packages; packages can implement additional services like Apache, but the management of those services is out of scope. Additional configuration of the installed software will be chargeable.
Management of files, files systems/disk space	Evaluation and study of actions for freeing and optimizing disk space
Management of disks and partitioning	Addition and removal of disks and partitions on the server
Restore of data	Restore files from the backup solution to either the original location or a secondary location for further verification
Management of services and daemons	Changes to the init levels of the system daemons, enabling and disabling them at the Client's request
Scheduled Tasks management	Creation and management of scheduled tasks, configuring the frequency, security environment and specific task to execute
Support case management with the software provider	Open and track support cases with software vendor on behalf of the Client, facilitating the exchange of information as necessary
License renewal process management	Management of the renewal of the license from Oracle if available and contracted
Management of antivirus agents	Control of the AV agents from the antivirus console server, including removal and upgrade of the agents
Management of backup agents	Control of the backup agents, including removal and upgrade of the agents
Printer Management	At Client's request: . Add, change or remove printer configurations and create queues . Enable, disable and flush printer queues . Execute basic connectivity checks to ensure that a printer can be contacted from print servers . All formatting and other troubleshooting are Client responsibility
Client User Access Report	Client may request, up to twice annually, that NTT provide a list of users who have access to Client systems and privileges those users have on applicable systems

(c) Operating System Patch Management

NTT will apply OS patches which are deemed Critical or High no more than once per month. NTT will inform the Client of available patches, and upon approval will deploy patches during the agreed maintenance window. If Client rejects, or otherwise does not approve within one business day before the scheduled patch, the patch cycle is canceled, unless required by the Client Service Description. All Operating System Patch Management is subject to the Client Service Description.

1.4 Supported Technologies

(a) The following operating systems are supported:

- (i) Red Hat Enterprise Linux versions 7.x, and 8.x, x64

- (ii) CentOS and Oracle Linux version 7.x, x64
- (iii) SuSe SLE 12.x and 15.x for SAP (only for SAP solutions)
- (iv) Amazon Linux 2 (on AWS only)
- (v) Ubuntu LTS versions 20.04 and 22.04
- (vi) Windows 2012/R2 Standard and Datacenter
- (vii) Windows 2016 Standard and Datacenter
- (viii) Windows 2019 Standard and Datacenter
- (ix) Windows 2022 Standard and Datacenter
- (b) The following configurations are supported:
 - (i) Standalone server: A standalone server or a set of standalone servers (managed independently from each other)
 - (ii) Red Hat Cluster Services, Red Hat Global Filesystem: A cluster of up to 8 nodes running RHCS or GFS; requires shared disks and a dedicated heartbeat network segment and interface are required if ILO access uses a normal user from the operating system
 - (iii) Windows Failover Cluster, Windows Terminal Services; require shared disks and dedicated heartbeat network segment and interface
- (c) The following configurations are not supported:
 - (i) RedHat Cluster and Windows Failover Cluster are not supported in public clouds such as NTT CIS, AWS and Azure.

1.5 Supported Environments

The following environments are supported:

- (a) NTT Managed Private Cloud
- (b) Public Cloud Environments

1.6 Limitations

- (a) Local Firewall (Windows) and iptables (Linux) features are deactivated by default via NTT standard build policies. Equivalent control is delegated to firewalls, external networking policies (such as NSX in Private Clouds or VPC in Public Clouds) and network segmentation (VLANs) in networking components. Exceptions may be made (for example, with PCI platforms that require local firewalling by design) and can be supported but are considered on a case-by-case basis and are not included in the standard service.
- (b) In the event that NTT has agreed to manage Client Operating Systems which are not hosted in its Supported Environments, Standard Security is out of scope, and Client must have in scope for these systems Managed Backup and Managed AV Console separately.
- (c) Operating Systems hosting Oracle Database Server managed by NTT may require additional planning and may not adhere to its regular recurring patch schedule.

1.7 Tasks Included in the Standard Service

As part of the Service, the following tasks are included in the setup fee for operating systems:

- (a) Hardening of the operating system
- (b) Configuration of network interfaces (public and private ones)
- (c) Configuration of the name resolution (DNS)
- (d) Windows: configuration of the Active Directory Domain or Workgroup relationship
- (e) Windows: Installation of Windows Deployment Services (configuration is out of scope and must be performed by the Client)
- (f) Configuration of NTP (time synchronization)
- (g) Installation and configuration of the hardware management agents and alert relaying (if required)
- (h) Configuration of NTP (time synchronization)
- (i) Installation and configuration of hardware management agents and alert relaying (if OS runs on physical servers)
- (j) Installation of AV and backup agents for the system; Configuration of policies as defined
- (k) Installation of any additional agents or services required by NTT to deliver the Service as described in the Statement of Work

1.8 Tasks Not Included in the Standard Service

The following tasks are not included in the standard transition for OS management:

- (a) Design, Topology and Technical Architecture, including Disaster Recovery and Business Continuity Plan

- (b) Migration of workloads
- (c) OS license management
- (d) Compatibility analysis between OS, applications, hardware, etc.
- (e) Replication of VM's to/from Azure and AWS
- (f) Creation of OS Templates for non-managed servers