

Leap Solutions Asia

Service Specifications – Leap GIO Private

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04	144	31 AUG 21	<p>General review of document</p> <p>Revised III. A. Base set, changed title to “III. A. Package”</p> <p>Revised III. A. Package, added “Only Windows license by SPAL on Leap GIO Cloud, Leap VPS, or SAP Cloud and Managed Services is provided, the technical support is not provided. If technical support for Windows is required, customers shall purchase it separately and directly from Microsoft.”</p> <p>Revised VI. B. Service level agreements (SLA) during disaster recovery operation, removed the sentence “Time within which normal service level must be established is 3 days. In the case where the customer is using DR service the normal service level must be established within 24 hours” to remove confusion</p> <p>Revised VI. C. Uptime, reviewed to align with actual operation:</p> <p><u>Removed:</u></p> <p>*Monitoring issues with the Monitoring Center are included in the downtime. Such issue will be included in the downtime only if the issue was reported.</p> <p>*1) Individual instances of downtime that had a duration of less than one minute are not included.</p> <p>If 10 instances of downtime occurred that were each 0 minute 30 seconds in duration, the total monthly downtime is 0 minutes.</p> <p>If 10 instances of downtime occurred that were each 1 minute 30 seconds in duration, the total monthly downtime is 10 minutes</p> <p><u>Added:</u></p> <p>*1) Downtime:</p> <ul style="list-style-type: none"> - It will be calculated based on LSA’s monitoring tool and not based on customer’s own monitoring. - Other than the downtime of the service purchased from LSA, additional time for the configuration, operation, technical support, and administration to bring up any other hardware/software used by the customer will not be counted towards the downtime.
05	XXX	15 SEP 22	<p>Revised VII. Support specifications, Contact Information of General issue inquiry and Commercial inquiry</p>

Contents

I.	Document service specifications.....	7
A.	Document scope	7
B.	Document structure.....	7
II.	Service outline.....	8
A.	Overview	8
B.	Service structure	8
C.	Terminology	9
D.	Components.....	12
E.	Contract number and standard provisioning.....	12
F.	Information to be provided by the customer	13
1.	Operations manager information	13
2.	Contract information	13
G.	Information provided to the customer.....	13
III.	Feature specifications	14
A.	Package	14
1.	Additional notes.....	14
2.	Restrictions	14
B.	vCenter server.....	15
1.	Additional notes.....	15
2.	Notes on fault tolerance	15
3.	Notes on failure.....	15
4.	VMware vCenter server revision	15
5.	Notes on patching and upgrading.....	16
6.	Restrictions	16
C.	Service network	16
1.	Management network	16
2.	vCenter network	16
3.	IP storage network.....	16
4.	vMotion network	16
5.	FT network	16
6.	FC storage network.....	17
7.	Additional notes.....	17
8.	Notes on capacity.....	18
9.	Notes on IP packet loop and transfer amount.....	18
10.	Restrictions	18
D.	Remote access	19
E.	VMware vSphere ESXi Server.....	19
1.	Notes on fault tolerance	20
2.	Notes on failure.....	21
3.	VMware vSphere ESXi version	21
4.	Notes on patching and upgrading.....	21
5.	Restrictions	21
F.	Datstore.....	22
1.	FC datstore specifications	22
2.	iSCSI datstore specifications	22
3.	Additional notes.....	23

4.	Things to do.....	23
5.	Notes on fault tolerance	23
6.	Notes on contract modification	23
G.	VM communication network	23
1.	Local vLAN	24
2.	Internet vLan	24
3.	Reverse DNS server	24
4.	Notes on global address.....	24
5.	Additional notes.....	25
6.	Things to do.....	25
7.	Notes on IP packet loop and transfer amount.....	25
8.	Restrictions	26
H.	Upon signing up for the service – initialization.....	26
IV.	Service terms and conditions	27
A.	General terms and conditions.....	27
B.	Provisioning conditions	27
C.	Terms of agreement.....	27
V.	Shared responsibility model	28
VI.	Service level agreements	29
A.	Service level agreements (SLA) during normal operation and disclaimers	29
B.	Service level agreements (SLA) during disaster recovery operation	30
C.	Uptime	31
D.	Service response time	31
E.	Common disclaimers.....	31
F.	Billing reduction due to service downtime	32
VII.	Support specifications.....	33
A.	Leap support center	33
1.	General issue inquiry.....	33
2.	Commercial inquiry.....	33
3.	Incident service request prioritization	33
4.	Required information for inquiry.....	34
B.	Emergency contact.....	34
C.	Support scope	35
D.	Maintenance	35
1.	Planned maintenance	35
2.	Emergency maintenance	35
E.	Notes.....	35
VIII.	Applying, changing, and cancelling	36
A.	Lead time.....	36
1.	Time taken before servicing.....	36
2.	The flow process till the start of the service.....	36
3.	Information sent to the customer	36
4.	Time taken for service change or cancellation	37
B.	Billing start time	37
C.	Minimum contract period.....	37
D.	Service change	37
E.	Service cancellation	37
F.	Reference	37

G. Disclaimers 37

I. Document service specifications

A. Document scope

This document describes the service specifications of Leap GIO Private.

B. Document structure

The service specifications consist of the following content:

Category	Description
Service Specifications	List of common specifications shared by Leap GIO Private

II. Service outline

A. Overview

VMware Virtualization Platform (hereinafter, refer to as “the Service”) is a service that assigns Leap Solutions Asia Co., Ltd. (hereinafter, refer to as “LSA”) Server Resource to customers via Physical Server Unit, with a pre-installed Hypervisor VMware vSphere ESXi provided by VMware, Inc.

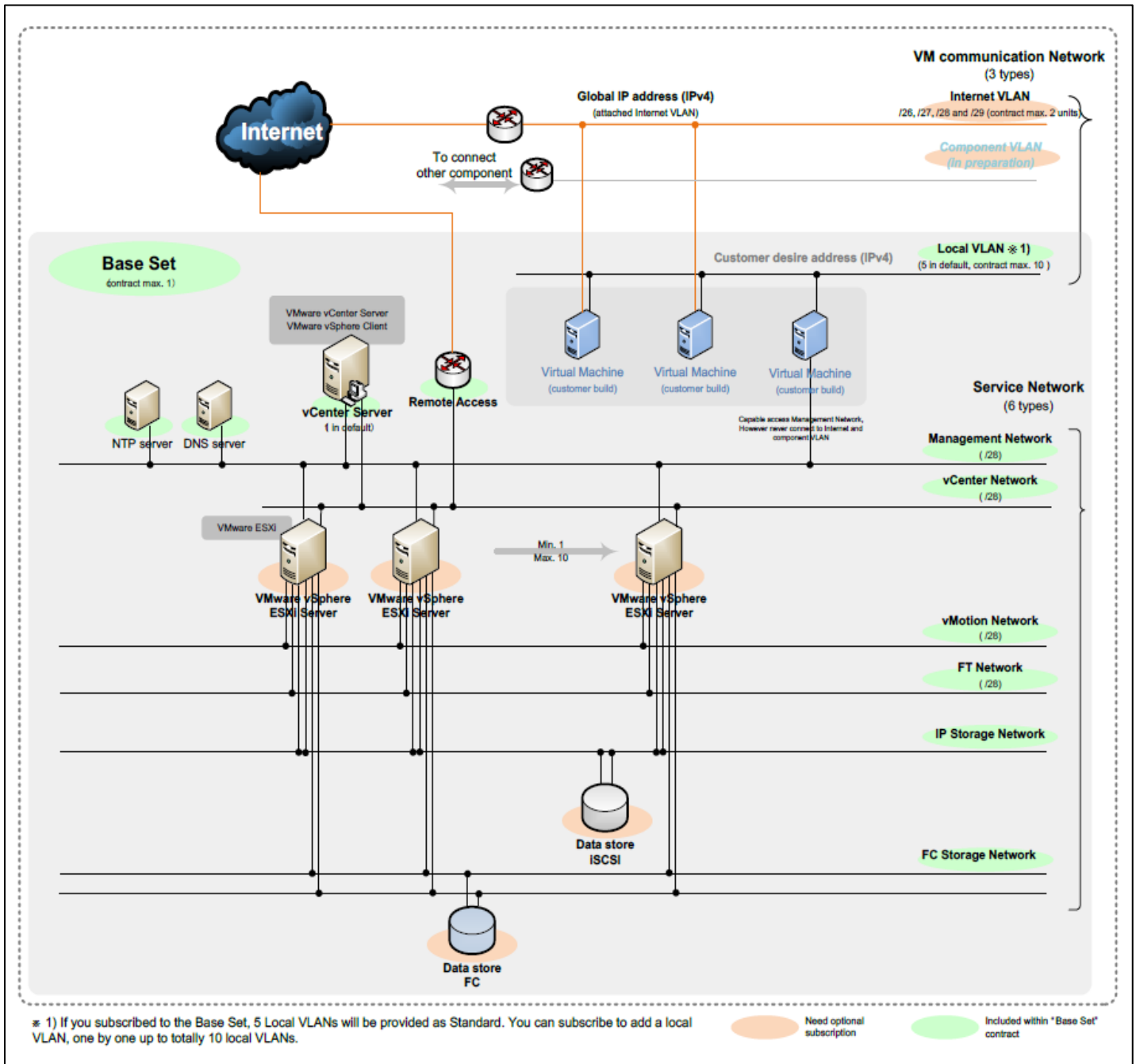
In addition, LSA resources are also available on the following environments:

- Storage of virtual machine images created on the Hypervisor
- Networks that use virtual machines to perform communication
- Virtual machines pre-installed with VMware vCenter server appliance, which is the software that provides a centralized platform to manage VMware vSphere virtualized environments VMware vSphere ESXi and VMware vCenter Server licenses. Operation of the provided functionality can be used as cloud services. Note that some features cannot be used as cloud services. Refer to the "Restrictions" clause.

Virtual Machines that you create on the Service (“Your Personalized Virtual Machine”) can be used in conjunction with collocation racks in TCCtech datacenters. This combination offers a diverse and flexible configuration and allows you to build cloud services on your system quickly.

B. Service structure

The following shows an overall chart of available components provided in the service. Some components are provided as standard, while others come with additional charges. Details on chargeable components are given in the next page.



C. Terminology

Terms	Description
HSRP	It stands for 'Hot Standby Router Protocol', developed by Cisco Systems, Inc. It is used for redundant configuration of routing features, by using multiple routers.

Terms	Description
NAT	An abbreviation for 'Network Address Translation'. This technology modifies IP Addresses contained in Packet Header when they are in transit across a traffic routing device, for the purpose of remapping one IP address space into another.
OVF Template	It stands for 'Open Virtualization Format Template'. An image format set by Distributed Management Task Force (DMTF). It is used to provide a Virtual Appliance (Virtual Machine installed with OS Software).
VMware vCenter Server	vCenter Software consisting of VMware vSphere that enables the management of multiple servers through a single console application.
VMware vSphere	A generic name for Virtualization Platform provided by the USA VMware, Inc. It includes Server, Storage, Network Virtualization Technology, and features equipped with the ability to manage its usability and scalability.
VMware vSphere Auto Deploy	Provisioning feature that centrally manage installation, upgrade, update and configuration of multiple Servers of VMware vSphere ESXi.
VMware vSphere client	Software that connects to VMware vSphere ESXi and VMware vCenter Server, and carries out vCenter on both of them. Graphical user interface is provided.
VMware vSphere Command-Line Interface (CLI)	Software that allows you to manage VMware vSphere ESXi and VMware vCenter Server by the command line.
VMware vSphere Distributed Power Management (DPM)	Optimizes placement of Virtual Machine on the Server, based on the usage of Virtual Machine Resource, and it is functioned to perform power on/off to the needs of the operation of the Server.
VMware vSphere ESXi Server	Server pre-installed with VMware vSphere ESXi provided in the Service
VMware vSphere ESXi	Hypervisor that virtualizes server, and activates Virtual Machine thereafter.
VMware vSphere Fault Tolerance (FT)	It continuously runs Shadow Virtual Machine that synchronizes the process content for the Primary Virtual Machine activating within the VMware vSphere, such that even when the Primary Virtual Machine stopped functioning, the shadow Virtual Machine will take over the process without any disruption.
VMware vSphere Network I/O Control	When congestion occurs in the Network Resource using multiple Virtual Machines, it will control the Network Resource Distribution allocated to each Virtual Machine dynamically, following the policy that has been pre-defined.
VMware vSphere Power CLI	Software that allows you to manage VMware vCenter Server by Windows PowerShell Command Line. It is provided in the form of Windows PowerShell Snap.

Terms	Description
VMware vSphere Storage APIs for Multi-pathing	It improves data transferability and reliability between Server and Storage, by using Storage Multi-pathing.
VMware vSphere Storage Distributed Resource Scheduler (SDRS)	It controls the Storage Resource Distribution allocated to each Virtual Machine dynamically, following the policy that has been pre-defined, based on storage used amount and storage data transfer load.
VMware vSphere Storage I/O Control (SIOC)	When congestion occurs in the Storage Access which uses multiple Virtual Machines, it will control the Network Resource Distribution allocated to each Virtual Machine dynamically, following the policy that has been pre-defined.
VMware vSphere vMotion	This feature moves Virtual Machine (operating in VMware vSphere) from one Server to another, while still holding on the activity condition.
VMware vSphere vStorage APIs for Array Integration (VAAI)	It suppresses the resources consumption, improves the performance and efficiency by offloading load onto disk array, through specific storage control.
VMware vSphere vStorage APIs for Data Protection	An integrated backup for Virtual Machine using VMware vSphere vStorage VMFS Snapshot. Online Virtual Machine Backup can be obtained.
VMware vSphere vStorage VMFS	VMware unique file system optimized to keep images of Virtual Machine that runs in VMware vSphere.
VMware vSphere Web Client	It is vCenter software that connects to VMware vCenter Server and to be used through Web Browser Graphical User Interface.
VMware vSphere Web Client Server	Software that provides connection from VMware vSphere Web Client to VMware vCenter Server.
VMware Certified Professional (VCP)	Qualification certified by USA VMware, Inc. upon receiving training in designing, constructing and operating Virtual Environment, using VMware vSphere, so as to achieve better operational performance, while still keeping up with those skills.
VRRP	It stands for 'Virtual Router Redundancy Protocol', set by RFC 3768. It is used during routing redundant configuration via multiple routers.
Internet Registry	An organization that allocates and assigns Global Addresses and manages them. Ex. APNIC
Statistics Level	Value representing a collection range of statistical data is used for VMware vSphere performance monitoring and problem solving. The larger the number, the wider the collection range. However, when the amount of associated collection data increases, Data Base Usage Amount will also increase.
Standard Virtual Switch	Virtual Switch that functions on each Server constituting VMware vSphere.
Dispersed Virtual Switch	Virtual Switch that functions as one of the switches for the multiple servers constituting VMware vSphere.

D. Components

This service provides the following items:

Name	Description
Base Set	Basic environment package for the usage of Virtualization Platform VMware vSphere and vCenter Server. VMware vSphere ESXi Server, Data Store and VLAN Network for external communication require separate subscriptions and different contracts.
VMware vSphere ESXi Server	Server pre-installed with Hypervisor VMware vSphere ESXi
Data Store	Storage to keep images of your personalized Virtual Machine in VMware vSphere ESXi Server. Mounting it to the VMware vSphere ESXi Server so that it is available for your usage.
FC 1TB	
FC 2TB	
iSCSI 1TB	
iSCSI 2TB	
VM Communication Network	VLAN is used in forms of communications between your personalized Virtual Machines in VMware vSphere ESXi Server. Depending on your preferences, you can use either VMware vSphere ESXi Server Standard Virtual Switch, or vSphere Distributed Switch (VDS).
Local VLAN	
Internet VLAN	
Internet VLAN /29	
Internet VLAN /28	
Internet VLAN /27	
Internet VLAN /26	

E. Contract number and standard provisioning

Optional items such as minimum contract numbers and maximum contract numbers, and the number of features provided as standard are shown as follows:

Example of notation:

- You can subscribe to a maximum of 1 Base Set.
- Each Base Set comes with bundled vCenter Servers.
- For each Base Set, you will need to subscribe to at least ONE VMware vSphere ESXi Server, and up to a maximum of 10 VMware vSphere ESXi Servers.
- For each Base Set, you will need to subscribe to at least ONE datastore either iSCSI or FC, and up to a maximum of 5 VMware vSphere ESXi Servers.

F. Information to be provided by the customer

1. Operations manager information

We may need to contact your operation manager(s) from time to time as part of our service operation. To ensure efficient security, we only allow the operation manager(s) that you have designated to contact LSA for support.

2. Contract information

The type and number of contracted service components you ordered are to be provided on the configuration sheets for LSA centralized customer information purpose.

The required customer information that will be provided to the customer when using the service are given as below:

- Configuration Sheet (Base Set)
- Configuration Sheet (VMware vSphere ESXi Server)
- Configuration Sheet (Datastore)
- Configuration Sheet (Internet VLAN)
- Configuration Sheet (Local VLAN)
- Account notification

G. Information provided to the customer

For all your contracted Leap Virtual Private Server service, your account information such as logins and passwords will be provided.

The information that will be provided to the customer when using the service are given as below:

- Base Set Management ID
- Service Network VLAN ID, Network Address and subnet Mask
- vCenter Server Host Name, IP Address
- Host Name,
- Network Information; VLAN IDs, IP addresses
- iSCSI/FC Server information, Unique ID and HLU
- VLAN ID
- VPN connection, ID and password
- vCenter Server IP address and Hostname
- vSphere Web Client, ID and password
- ESXi server, hostname and IP, its ID and password

III. Feature specifications

A. Package

It is a basic environment package which enables you to use Virtualization Platform VMware vSphere and its vCenter Server. However, VMware vSphere ESXi Server, Datastore, and VLAN Network for external communication will have to be subscribed separately in another contract.

Leap GIO Private service only provides one type of standard package.

Items	Specifications
Contract unit	1
Min. No. of Contract units	1
Max. No. of Contract units	1
Contract Terms	VMware vSphere ESXi Server and local storage used by this Base Set have to be contracted simultaneously, at least 1 for each. Internet VLAN will have to be contracted simultaneously at least 1.
Termination Terms	Once Base Set is terminated, vCenter Server and ESXi Server, Datastore, Local VLAN, and Internet VLAN used by this Base Set will also be terminated.

Only Windows license by SPAL on Leap GIO Cloud, Leap VPS, or SAP Cloud and Managed Services is provided, the technical support is not provided. If technical support for Windows is required, customers shall purchase it separately and directly from Microsoft.

1. Additional notes

Base Set provides 5 Local VLANs as per the standard.

2. Restrictions

The number of vCenter Server and service network provided by the Base Set may not be changed.

There is an upper limit to the number of Base Set VMware vSphere ESXi Server and datastore that can be contracted in the Base Set.

The following restrictions are observed in some of the VMware vSphere features:

- VMware vSphere Auto Deploy is not available.
- VMware vSphere Distributed Power Management (DPM) is not available.
- VMware vSphere Network I/O Control
 - Please do not use Service Networks (Management Network, IP Storage Network, vMotion Network, and FT Network), as the results achievable in the VM Communication Network of the Service is limited.
 - Please do not use VMware vSphere Storage APIs for Multi-pathing.
 - Please do not use adjustment function based on VMware vSphere Storage Distributed Resource Scheduler (SDRS) Storage I/O Loading.
 - Please do not use VMware vSphere Storage I/O Control (SIOC).
 - Please do not use VMware vSphere vStorage APIs for Array Integration (VAAI).

- VMware vSphere vStorage APIs for Data Protection. Datastore for this Service cannot be connected to servers other than VMware vSphere ESXi Servers of the service. For this reason, when you assume such configuration, Off-host backup would not be accepted.
- Dispersed Virtual Switch. Private VLAN (PVLAN) feature is not available.

In addition, there are also guidelines and restrictions on settings with regards to each of the VMware vSphere features provided by the Service. For more details, please refer to the notes and the restrictions for each feature in this document as well as the user guide for GIO Private.

B. vCenter server

vCenter function is provided by VMware vCenter appliance, the specifications are below.

1. Additional notes

vCenter Server is provided as a Virtual Machine, on a redundant configured Virtualization Platform, and it is managed by LSA (not provided on your VMware vSphere ESXi Server's Virtual Machine).

DNS Server is delivered to you with Host Name & IP address of vCenter Server and VMware vSphere ESXi Server registered.

***VMware vSphere ESXi Server Host Name & IP address are named and numbered by LSA, in accordance with predetermined rules. VMware vSphere ESXi Server Host Name & IP address of number corresponding to the maximum contract number has already been registered in advance.

2. Notes on fault tolerance

When VCenter Server is not able to be launched or managed due to loss of files or unexpected rewriting within the VCenter Server Local Disk, LSA will reinstall the VCenter Server and deliver it to you. You would be required to carry out the system restoration on your own, after obtaining and reinstalling data files backup and your personal settings.

*** If the failure occurs due to violation of the notes and restrictions, re-installation of VCenter Server will be charged. For more details, please contact LSA sales representative.

We do not guarantee the usability and accuracy of NTP Server (reference destination) configured in the vCenter Server, due to various reasons, such as Network transmission delay. Please set an NTP Server that is suitable for your environment as the reference destination for a better performance.

3. Notes on failure

Upon detecting Virtualization Platform hardware fault where the vCenter Server (Virtual Machine) operates, LSA will contact you and conduct hardware maintenance.

4. VMware vCenter server revision

VMware vCenter Server Version installed in VCenter Server as well as its update combination are as follows:

VERSION	BUILD NUMBER
VMware vCenter Server 6.0.0	3634791

***We do not guarantee that the above version and build number does not contain security vulnerability.

5. Notes on patching and upgrading

Under normal circumstance, patch or upgrade of vCenter by yourself result in your sole responsibility. If the system is eventually disrupted after such action, LSA will not be held responsible of the issues or damages to the service resulting from the changes. In that case, if you require help from LSA for the re-installation, additional charges will occur. In the case where a vulnerability is found on the current vCenter version and LSA determines that a patch or an upgrade is a necessity, LSA will provide you with instructions and steps for upgrade or patch.

6. Restrictions

Please do not change vCenter Server Host Name, IP address and Default Gateway.
Please do not remove, or change, password of the Account (monitor) managed by LSA.
For the inventory managed by vCenter Server, please do not use multi-byte characters, including Japanese names in inventory.

C. Service network

It is a network connecting vCenter Server, VMware vSphere ESXi Server and Datastore. The following service network is provided, as per the standard, to the subscribed Base Set.

1. Management network

It functions as a platform for IP communication between vCenter Server and VMware vSphere ESXi Server, and other DNS/NTP devices.

2. vCenter network

It functions as a platform for IP communication between Remote Access and VCenter Server, and VMware vSphere ESXi Server.

3. IP storage network

It functions as a platform for IP communication between VMware vSphere ESXi Server and iSCSI Datastore.

4. vMotion network

It functions as a platform for IP communication among VMware vSphere ESXi Servers, when using VMware vSphere vMotion.

5. FT network

It functions as a platform for IP communication among VMware vSphere ESXi Servers when using VMware vSphere Fault Tolerance (FT).

6. FC storage network

It functions as a platform for Fiber Channel communication among FC servers (VMware vSphere ESXi Servers) and FC storage.

Each network specification is given below:

ITEMS	SPECIFICATIONS					
	Management Network	vCenter Network	vMotion Network	FT Network	IP Storage Network	FC Storage Network
Numbers of standard provision	1	1	1	1	1	2
Maximum provision number	1	1	1	1	1	2
VLAN ID	To be assigned by LSA					-
IP address	To be assigned by LSA					-
IP address count	16 (/28)	16 (/28)	16 (/28)	16 (/28)	16 (/28)	-
IP address type	Private Address					
VMware vSphere ESXi Server NIC ports	2 Active/Standby	2 Active/Standby	2 Active/Standby	2 Active/Standby	2 Active/Active	-
VMware vSphere ESXi Server FC ports	-					2 Active/Active
Connection destination	Standard Virtual Switch	Distributed Virtual Switch	Standard Virtual Switch			-
Maximum bandwidth	10 Gbps					8 Gbps each

7. Additional notes

IP address is among private Address prescribed in RFC 1918, and will be assigned by LSA.

Management Network can be connected with Virtual Machine that you have built. Please also check the restrictions described in the later part of this document.

When connecting the Virtual Machine to the Management Network, please use the IP address of a predetermined range specified by LSA.

8. Notes on capacity

The band of Management Network is set on assumption that IP communication is used between vCenter Server and VMware vSphere ESXi Server, as well as between others VMware vSphere ESXi Servers.

When connecting Virtual Machine to the Management Network and generating IP signal between the Virtual Machine and VCenter Server, or VMware vSphere ESXi Server, these IP signals may be inhibited.

9. Notes on IP packet loop and transfer amount

Management Network, IP Storage Network, vMotion Network and FT Network will cease operation of Network Interface (that connects to servers of that facility), once detected an occurrence of IP Packet Loop within the VMware vSphere ESXi Server hosted by LSA Service Facility. You will be notified by LSA when Network Interface is suspended. Please eliminate IP Packet Loop. If you need to activate Network Interface, please contact Leap Support Center.

Management Network, IP Storage Network, vMotion Network, and FT Network will place a limit on the number of IP Packet allowed to be transmitted by that Server on that facility, when the broadcast packet of VMware vSphere ESXi Server, hosted by LSA Facility, exceeds a certain amount of value (per server).

When these packet numbers fall below a certain amount of value, such limit will be lifted. Also, if these packet numbers have not fallen below certain value after a certain timeframe, we will inform you about this.

10. Restrictions

The Service Network should only be used for the applications as defined in [C. Service Network](#).

Use only the range of predetermined IP addresses specified by LSA to connect Virtual Machines, which you have created, to the Management Network. However, doing so, consumes the ESXi server IP address, which affects the maximum available contracted ESXi servers.

The following table lists the IP address scheme for each network:

ITEMS	SPECIFICATIONS					
	Management Network	vCenter Network	vMotion Network	FT Network	IP Storage Network	FC Storage Network
4th Octet /28 range	Management Network	vCenter Network	vMotion Network	FT Network	IP Storage Network	FC Storage Network
+0: Network address	unused	Unused	unused	unused	IP Storage Network segment is /24 and each ESXi IP address is assigned by LSA. Customer is not allowed to change it.	-
+1	vCenter Server	vCenter Server	ESXi Servers	ESXi Servers		-
+2 to +11 ***	ESXi servers	ESXi servers				-
+12	LSA network device	LSA network device				-
+13	LSA network device	LSA network device				-

+14	LSA network device	LSA network device				-
+15: Broadcast address	unused	unused	unused	unused		-

*** When you wish to connect any Virtual Machines to the Service Network, you are only allowed to use the Management Network. Please only use these IP addresses (+2 to +11). Use of other IP addresses in this range may result in issues for which LSA will not be held responsible.

D. Remote access

Remote Access serves as an environment with access to vCenter Server and VMware vSphere ESXi Server, by connecting to vCenter Network via the Internet.

The following Remote Access is provided as per the standard of your subscribed Base Set:

ITEMS		SPECIFICATIONS
Number of standard provisions		1
Maximum provision number		1
Available features		
Virtual Dial-Up feature		
Availability		Provided as standard
Supported protocols		SSL Dial Up
Connection account		1***
Concurrent sessions		2
Communication allowed Protocol under SSL tunnel		unlimited

Additional notes:

- Management Network is connected to routers for receiving Remote Access Connection.
- This router is set as a Default Gateway for vCenter Server and VMware vSphere ESXi Server.

E. VMware vSphere ESXi Server

It is a server that has Hypervisor VMware vSphere ESXi pre-installed.

You may subscribe to the following VMware vSphere ESXi Server for your subscribed Base Set:

ITEMS		SPECIFICATIONS
Contract Unit		1
Min. Contract Number		1
Max. Contract Number		10
Contract Condition		-
Termination Condition		-
Hypervisor		VMware vSphere ESXi
vSphere 6.0		VMware vSphere ESXi 6.0 installable Enterprise Plus Edition
CPU Socket		2

CPU Core Count	12, 20
Memory	192 GB
Local Disk	None
USB Memory	8 GB
NIC Port	6 Port
vmnic0	Management Network (vSwitch0)
vmnic1	Management Network (vSwitch0)
vmnic5	vMotion /FT /IP Storage Network (vSwitch1)
vmnic7	vMotion /FT /IP Storage Network (vSwitch1)
vmnic4	vCenter Network and Internet /Local VLAN (dvSwitch)
vmnic6	vCenter Network and Internet /Local VLAN (dvSwitch)
NIC Port Unit Band Limit	10 Gbps
Hostname	To be assigned and set up by LSA *** rule <siteID>pri<No.001 ~ 100> (eg: bn01pri001)
IP Address	To be assigned and set up by LSA *** For more detail, please refer to Service Network
Domain Name	To be assigned and set up by LSA
Default Gateway	To be assigned and set up by LSA *** Set Remote Access Router
Reference DNS Server	To be assigned and set up by LSA
Reference NTP Server	To be assigned and set up by LSA
Reference DNS Server (Your Personalized Virtual Machine)	none *** You may set the TCCT DNS server IP address
Reference NTP Server (Your Personalized Virtual Machine)	none *** You may set the TCCT DNS server IP address
Account delivered to you	Root
Remote Console	Not Provided

1. Notes on fault tolerance

The main parts of VMware vSphere ESXi Server are redundantly configured. If failure occurs in parts where redundant configuration has not been carried out, the server may be shut down immediately. However, if failure occurs in the main part where redundant configuration has been carried out, you will receive a notification from us to temporarily suspend VMware vSphere ESXi Server as we run maintenance. If necessary, establish a contract of additional VMware vSphere ESXi Server to set up a redundancy configuration. Alternatively, you can use an additional VMware vSphere ESXi server as the physical server to which virtual machines you have created are moved.

The parts where redundant configuration is/is not carried out are as follows:

- Parts that is redundantly configured
 - NIC (Suspend VMware vSphere ESXi Server when conducting maintenance)
 - FC ports (Suspend VMware vSphere ESXi Server when conducting maintenance)
 - Power supply
- Parts that is not redundantly configured

- CPU
- Memory
- USB memory

When the vCenter Server cannot be launched or managed due to loss of files or unexpected rewriting within the VCenter Server Local Disk, LSA will reinstall the vCenter Server and deliver it to you. You would be required to carry out the system restoration on your own, after obtaining and reinstalling data files backup and your personal settings. If failure occurs due to violation of the notes and restrictions, re-installation of VCenter Server will be charged. For more details, please contact LSA sales representative.

We do not guarantee the usability and accuracy of an NTP Server (reference destination) configured in the vCenter Server, due to various reasons, such as network transmission delay. Please set an NTP Server that is suitable for your environment as the reference destination for a better performance.

2. Notes on failure

Upon detecting VMware vSphere ESXi Server hardware fault, LSA will contact you and conduct hardware maintenance. If you found any VMware vSphere ESXi Server hardware fault, please contact Leap Support Center.

The communication path between VMware vSphere ESXi Server and the iSCSI Datastore is configured with redundancy using one IP Storage Network (iSCSI) of Active/Unused Configuration. If VMware vSphere ESXi Server NIC Port connecting to the Active IP Storage Network (iSCSI) fails to perform due to failure of your operation, or if load optimization function of the storage device is activated, it will automatically switch the Unused NIC status to Active in order to communicate with the storage. However, the occurrences of such switch depend on the communication status of the NIC Port of each respective VMware vSphere ESXi Server.

3. VMware vSphere ESXi version

VMware vSphere ESXi Version installed in VMware vSphere ESXi Server, as well as its update combination, are as follows:

VERSION	BUILD NUMBER
VMware ESXi 6.0.0	3620759

***We do not guarantee that the above version and build number does not contain security vulnerability.

4. Notes on patching and upgrading

Under normal circumstance, patch or upgrade of ESXi server by yourselves is your sole responsibility. If the system is eventually disrupted after such action, LSA will not be held responsible of the issues or damages to the service resulting from the changes. In that case, if you require help from LSA for the re-installation, additional charges will occur.

In the case where a vulnerability is found on the current ESXi server version and LSA determines that a patch or an upgrade is a necessity, LSA will provide you instructions and steps for upgrade or patch.

5. Restrictions

Please do not use VMware vSphere ESXi Server USB memory as a datastore.

Please do not change the Host Name, IP address, Domain Name and Default Gateway of VMware vSphere ESXi Server.

F. Datastore

It is the storage used to store images of virtual machines that you have created on VMware vSphere ESXi Server.

- This storage is already mounted to the VMware vSphere ESXi servers when delivered.
- The specifications of the datastore that can be contracted vary depending on the contracted Base Set.
- The FC datastore Disk volumes are provided as block devices to VMware vSphere ESXi servers over the FC Storage Network via the FC protocol.
- The iSCSI datastore Disk volumes are provided as block devices to VMware vSphere ESXi servers over the iSCSI Storage Network via the iSCSI protocol.

1. FC datastore specifications

ITEMS	SPECIFICATIONS
Supported protocols	-
Common points	-
Security	WWN zones for FC server datastore are created for each customer. Communication between FC servers and the FC Storage Network is isolated for each customer.
Number of standard provisions	0
Contract Unit	1
Min. Contract Number Total	Total 1
Max. Contract Number Total	Total 5
Contract Condition	-
Termination Condition	-
Available Datastore	FC datastore - 1TB FC datastore - 2TB

2. iSCSI datastore specifications

ITEMS	SPECIFICATIONS
Supported protocols	iSCSI (TCP/3260)
Common point	A Target IP Address will be assigned and its datastore is mounted when delivery.
Security	<ul style="list-style-type: none"> • IQNs for iSCSI server datastore are created for each customer. • IP communication between iSCSI servers and iSCSI datastore are logically isolated for each customer.
Number of standard provisions	0
Contract Unit	1
Min. Contract Number	Total 1
Max. Contract Number	Total 5

Contract Condition	-
Termination Condition	-
Available Datastore	iSCSI datastore - 1TB iSCSI datastore - 2TB

3. Additional notes

The equipment used to configure the IP Storage network and FC Storage network has redundant configuration.

Datastore is provided to you as storage devices recognized by all contracted VMware vSphere ESXi servers connected to your storage network. The datastore cannot be configured to only be available to specific VMware vSphere ESXi servers.

The specifications of the iSCSI servers, FC servers, and storage processors that provide datastore may vary depending on the timing at which datastore contracted.

Both VMware, Inc. and LSA do not recommend grouping multiple units of datastore together via VMware vSphere ESXi to be used as a single VMware vSphere vStorage VMFS.

4. Things to do

If you wish to terminate the datastore, you will have to un-mount the datastore from the VMware vSphere ESXi Server beforehand.

5. Notes on fault tolerance

LSA does not back up files and block data stored in the datastore. If necessary, contract additional datastore to function as the data backup storage used to store scheduled backups.

6. Notes on contract modification

To change datastore contracts, cancel your current datastore contract and order a new datastore contract that reflects the desired changes.

Files and block data stored in the former datastore will not be provided with the new contract. As the data owner, you need to move them by yourselves.

Datastore capacity cannot be changed for existing contracts.

G. VM communication network

The VLAN used by your personalized Virtual Machines in VMware vSphere ESXi Servers, it serves with the purpose of conducting various types of communication. It is used by setting to Standard Virtual Switch or Distributed Virtual Switch of VMware vSphere ESXi Server.

The VLANs have been designed and configured such that LSA and customer user access is appropriately segmented from other customer users which make it not possible to access other customers’ data and vice versa.

1. Local vLAN

The VLAN connecting the Virtual Machines that you build.

2. Internet vLan

The VLAN connecting your personalized Virtual Machines to the Internet.

You can choose the following item, depending on the number of IPv4 Global Address that you are using.

- Internet VLAN /29
- Internet VLAN /28
- Internet VLAN /27
- Internet VLAN /26

3. Reverse DNS server

The PTR Record for the IPv4 Global Address assigned by LSA can be registered to TCCtech DNS Server. For more details, ask an LSA sales representative.

4. Notes on global address

The Global Address assigned by LSA is not usable with other LSA services or other company services.

From a security’s point of view, LSA implements Global Address Source Address Validation. In the service, only the

Global Address that you have been assigned will be able to be used for communication with Internet. Packets with invalid Source Global Address will be blocked.

Each VLAN specification is as follows:

ITEMS	SPECIFICATIONS	
	Local VLAN	Internet VLAN
# of VLANs (default)	5	0
Additional order VLAN Unit	1	1
Max. # of VLANs	Total 10	Total 2
Contract Condition	To contract Base Set	
Termination Condition	-	
VLAN ID	To be assigned by LSA	
IP Address	To be assigned by the customer	To be assigned by LSA

# of IP Address that a customer can have	Any	Following items: ** ▪ /29 (3 Addresses) ▪ /28 (11 Addresses) ▪ /27 (27 Addresses) ▪ /26 (59 Addresses)
IP Address Type	Prescribed Address ***	Global Address
Report of usage IP address to LSA	Not Required	-
# of VMware vSphere ESXi server NIC port	2 (active/standby)	
Connection Destination	Standard Virtual Switch or Distributed Virtual Switch	
Maximum Bandwidth	10 Gbps	

** Network and Broadcast Address will not be used. The last 3 host Addresses before the Broadcast Address will be used as a Gateway need.

*** Prescribed Address that you assign has to satisfy one of the following conditions.

Private Address stipulated by RFC 1918 and RFC 4193

Unique Global Address that has been allocated by a proper procedure from Internet Registry, or the operator managing that IP address.

Note that LSA does not provide routing from the Internet to Global Address.

5. Additional notes

When you subscribed to 1 ESXi Server, 5 Local VLANs will be provided as per the standard provision of Base Set. Regardless of the number of ESXi Servers that you have subscribed to, the number of provided Local VLANs as per the standard is 5. If additional VLANs is required, kindly contact LSA.

If you built a router on top of your personalized Virtual Machine, and use VRRP or HSRP as a Redundancy Protocol, please use the Group ID as given below

Redundancy Protocol	Group ID
VRRP	241 ~ 254
HSRP	241 ~ 254

6. Things to do

You will select either Standard Virtual Switch, or Distributed Virtual Switch, to connect to VLAN. You will also need to set up the VLAN ID.

7. Notes on IP packet loop and transfer amount

Once an occurrence of IP Packet Loop is detected, the VM communication network will cease the Network Interface that connects to the server of that facility, in the VMware vSphere ESXi Server hosted by LSA Service Facility. You will be notified by LSA when the Network Interface is suspended. Please eliminate IP Packet Loop. If you need to activate the

Network Interface, please contact Leap Support Center. When the broadcast packet of VMware vSphere ESXi Server, hosted by LSA facility, exceeds a certain amount of value (per server), the VM communication network will place a limit on the number of IP Packets allowed to be transmitted by that server on that facility.

When these packet numbers fall below a certain amount of value, such limit will be lifted. Also, if these packet numbers have not fallen below certain value after a certain timeframe, you will be informed by LSA.

8. Restrictions

For the VLAN that the Virtual Machines use for communication, please do not use the VLAN ID other than the one allocated for the VM communication network by LSA.

If you built a router on top of the Virtual Machine that you built, and use VRRP or HSRP as a Redundancy Protocol, please do not use Group ID of prescribed range other than what LSA stipulates.

H. Upon signing up for the service – initialization

Upon sign up for the service, LSA will carry out the following initialization: A package providing a configuration and optional items and complying with the terms and conditions as stated in the feature specifications.

On the other hand, you are required to carry out each item and optional service as set forth clearly in all the **Notes**, **Additional notes**, and **Things to do** chapters.

IV. Service terms and conditions

A. General terms and conditions

In order to use the Leap GIO Private service, as a customer, you need to review, sign, and return the quotation back to LSA. The **General Terms and Conditions**, the **Acceptable Use Policy (AUP)**, and the **Service Specifications – Leap GIO Private** (this document) are also attached along with the quotation for your review and acceptance.

B. Provisioning conditions

When you have decided to use the service, you are required to sign a contract which is subscribed for the following items:

- 1 or more VMware vSphere ESXi Server(s)
- 1 or more Datastore(s) (regardless of item type)
- 1 or more Internet VLAN(s)

Upon satisfying the above conditions, a Base Set will be provided as per the standard. Only 1 Base Set will be provided.

C. Terms of agreement

As a customer, you must also agree to the following terms upon subscribing to the service:

- The service assumes that its user has a clear understanding on all specifications and features outlined for the VMware vSphere ESXi and VMware vCenter Server, and that the service is used by a system engineer or system operation manager (VMware Certified Professional or having equivalent qualifications) experienced in design, construction, and operation of Virtual Machines.
- Without a qualified system engineer or system operation manager, these following problems may occur:
 - All features of the service may not be fully utilized.
 - Unexpected failure, including stop and loss of Virtual Machines
 - The service will no longer be usable due to usage that violates the notes and the restrictions.
- If you do not have a qualified system engineer or system operation manager, LSA is able to provide technical assistance with regards to design, construction, and operation. Please feel free to contact us. Technical assistance is a separate and chargeable service.
- Prior to the signing of the service contract, you are required to read through and agree to all notes and restrictions described in all relevant documents, including this document and the user guide for GIO Private.
 - Depending on the nature of the service you subscribed to, there might be circumstances whereby certain technical restrictions are not inflicted upon your usage, which is not in accordance with what is set forth in the notes and restrictions. It is due to the privileged account given to the customers of VMware vSphere ESXi and VMware vCenter Server.
 - If an error occurs due to violations of the notes and restrictions such that it requires re-installation by LSA, the re-installation service will be charged.
 - However, we do not guarantee the proper functioning of the system after re-installation is carried out.
- This Service Specifications document, as well as your service usage aspect and application, shall be based on the license agreement of VMware vSphere ESXi and VMware vCenter Server, as stipulated by VMware, Inc. who may change the license agreement. The Service Specifications and your service usage are subject to changes or further restrictions. Under this circumstance, you are required to comply with the changes entirely or terminate the contract.

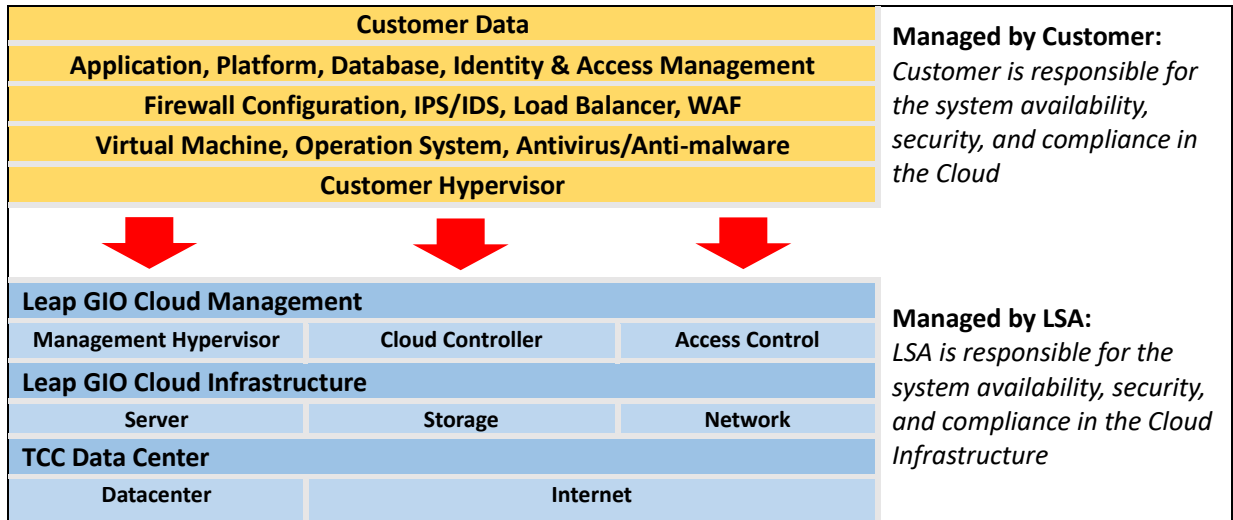
V. Shared responsibility model

Customer:

- Customer Data
- Customer Hypervisor
- Customer Application and Service
- Operating System
- Antivirus/Anti-malware
- Network & Firewall, IPS/IDS, Load Balancer, Web Application Firewall (WAF)
- High Availability, Disaster Recovery, and Scaling
- Data Protection (Backup, Encryption)

Leap Solutions Asia:

- Cloud Infrastructure: Server, Storage, Network
- Cloud Management: Management Hypervisor, Cloud Controller, Access Control
- Data Center Facilities
- Internet Access



VI. Service level agreements

A. Service level agreements (SLA) during normal operation and disclaimers

Service	SLAs	Disclaimers
<p>Leap GIO Private</p>	<ul style="list-style-type: none"> • At least 99.99% uptime together with the stipulation that two or more VMware vSphere ESXi servers shall not be down at the same time provided that at least two ESXi servers are included in the Leap GIO Private Service and that these ESXi servers are configured for redundancy. The following is required to run VMware vSphere ESXi servers. • Power to the VMware vSphere ESXi servers must be available for use at all time. 	<p>The following circumstances are exempt from classification as VMware vSphere ESXi server downtime with regards to the SLA:</p> <ul style="list-style-type: none"> • VMware vSphere ESXi servers that have not been configured for redundancy are down. • Virtual machines created by customers go down after or during moves between VMware vSphere ESXi servers that are configured for redundancy. • Virtual machines created by customers on VMware vSphere ESXi servers as well as their operating systems, middleware, and applications are down due to causes other than VMware vSphere ESXi servers being down. • VMware vSphere ESXi servers being shut down by customers regardless of intention or negligence. • Some or all integrated management servers (vCenter) are down. • "Remote Access" and "vCenter Network" are offline. • If a customer changes the "root" password of "vCenter" or "ESXi," LSA engineers will not be able to support and LSA will not include any delay due to such change in the SLA. • In the case where a customer uses the backup storage instead of the production storage, if the backup storage failed, LSA does not consider

		<p>such event affecting customer’s environment part of the SLA.</p> <ul style="list-style-type: none"> • In the case where a customer uses VMware HA to provide high availability to any applications running on virtual machines, virtual machines will automatically be restarted in the event where a hardware failure occurs. This is a normal event due to the behavior of the technology used. LSA does not consider such event part of the SLA.
<p>The service Level agreements (SLA) report will be shown at the following link: www.leapsolutions.co.th/status</p>		

B. Service level agreements (SLA) during disaster recovery operation

Service	SLAs	Disclaimers
<p>Leap GIO Private</p>	<p>At least 99.00% uptime together with the stipulation that two or more VMware vSphere ESXi servers shall not be down at the same time provided that at least two ESXi servers are included in the Leap GIO Private Service and that these ESXi servers are configured for redundancy. The following is required to run VMware vSphere ESXi servers.</p> <ul style="list-style-type: none"> • Power to the VMware vSphere ESXi servers must be available for use at all times. 	<ul style="list-style-type: none"> • LSA will define the recovery priorities by starting from customer using Disaster Recovery (DR) service. • Minimum service description of recovering private cloud is recovering customer's vCenter and ESXi server with HIGH Priority without monitoring • Time within which minimum service level must be established is 24 hours. In case customer is using DR service the minimum service level must be established within 4 hours • Customer should be responsible for the preparation of the connectivity to the DR site

C. Uptime

Uptime is calculated using the following expression:

$$\text{Uptime (\%)} = [\text{Total Monthly time (min)} - \text{Total Monthly Downtime (min)}^{*1}] / \text{Total Monthly time (min)}^{*2} \times 100$$

*All values are truncated to two decimal points.

*1) Downtime:

- It will be calculated based on LSA's monitoring tool and not based on customer's own monitoring.

- Other than the downtime of the service purchased from LSA, additional time for the configuration, operation, technical support, and administration to bring up any other hardware/software used by the customer will not be counted towards the downtime.

*2) Total number of days in that particular month multiplied by 1440 (60min x 24h)

Example: If you experienced 30 minutes of downtime in a 30 days-month, the calculation would be:

$$\begin{aligned} \text{Uptime (\%)} &= [(30 \text{ Days} \times 24\text{Hrs} \times 60 \text{ mins}) - (\text{Downtime } 30\text{mins})] / (30 \text{ Days} \times 24\text{Hrs} \times 60 \text{ mins}) \times 100 \\ &= (43,200 \text{ mins} - 30 \text{ mins}) / 43,200 \text{ mins} \times 100 \\ &= 43,170 \text{ mins} / 43,200 \text{ mins} \times 100 \\ &= 0.9993 \times 100 \\ &= 99.93\% \end{aligned}$$

D. Service response time

Leap GIO Private system response time is less than or equal to 5 (five) milliseconds with a minimum of 90% success ping transactions from Leap GIO Infrastructure to the ISP Internet Gateway. The response time is based on normal operation usage.

E. Common disclaimers

The following disclaimers are common to all components defined within the Service Level Agreements.

Unless explicitly defined in specific service level agreements, the specifications of devices configuring servers and storage that you use through the Leap GIO Private service including but not limited to CPU, memory, capacity, bandwidth limits, and performance, and of network paths including but not limited to Internet, closed networks, private branch lines, and related network control equipment are not defined in service level agreements. Issues, faults, and performance degradation with any of these specifications/devices have no effect on service levels.

The following circumstance is not included in downtime:

- Downtime due to limitations on service, termination of service and suspension of service as defined in the quotation, the General Terms & Conditions, the Service Specifications, and the Acceptable Use Policy (All mentioned document provided by LSA).
- Acts/events prohibited from being performed by contracting parties including but not limited to the following examples:
 - Generation of significant traffic due to virus infections or unauthorized access of virtual machines created by customers.
 - Network loops caused by transmission of multicast or broadcast packets due to network / system design or configurations lacking measures to prevent switching and routing loops.
 - Attempts to take advantage of security vulnerabilities to gain unauthorized access to LSA service facilities, to shut down service functionality, or to degrade service performance.

- Using hardware or software that generates significant amounts of traffic to attempt measuring service performance.
- Downtime due to events of force majeure. Events of force majeure including but not limited to the following examples:
 - Social unrest, such as wars, civil wars, terrorism, and riots.
 - Natural disasters such as earthquakes, tsunamis, volcanic eruptions, lightnings, floods, snowfalls, and falling rocks.
 - Obstruction of system operations due to Denial of Service (DoS) attacks.
 - Unauthorized Access.

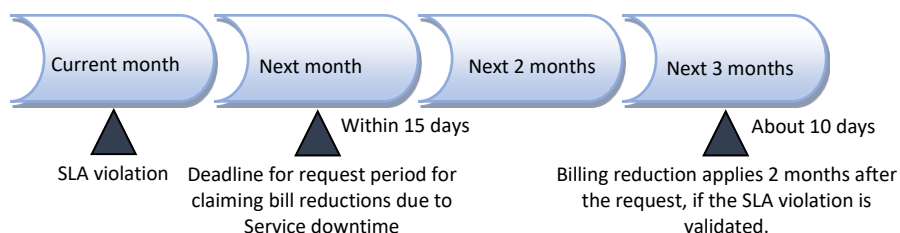
F. Billing reduction due to service downtime

General billing reduction due to downtime of LSA's services is defined as follows		
Conditions for reduction		Description
Reduction condition	Claim requirement	Required *Billing reductions due to service downtime are not performed automatically
	Claim method	Fill in the Billing Reduction form given by LSA Note: Please contact your LSA sales representative System ID that experienced the SLA violation Information regarding the period, details and objective evidence of the SLA violation *1*2 Evidence of your redundant configuration in case of Leap GIO private
	Claim deadline	On 15 th of the following month after the SLA violation Note: If that day is a non-working day, it will be on next working day.
	Review of claim	LSA will investigate the validity of the SLA violation regarding the received claim. If the SLA violation is validated, the billing reduction described as follows will be processed.
Billing reduction details	Amount of billing reduction	10% of monthly contracted fee for the month in which the SLA violation occurred regarding the service that experience the SLA violation *3 Note: This reduction is applied to the monthly service fee for any optional services included with the applicable component
	Invoice that receives the reduction	The reduction will be applied on the invoice that is billed two months after the month where the SLA violation occurred

*1: Inclusive of but not limited to Base Server System Log, Kernel dump, network interface Communication capture and your own Monitoring System Log. It also does not guarantee that these will be usable as information that unconditionally satisfies the requirement.

*2: When LSA sends notification that shows indication of errors on Service Equipment and its impact on operation of the subscribed component, these may be usable as information that unconditionally satisfies the requirement.

*3: After the violation has occurred, if the component is upgraded or terminated, and the amount of bill reduction is higher than invoice that receives the reduction, this bill is changed to the minimum charge of the previous service state. The bill reduction cannot be applied to fees other than the monthly service fee of the applicable components.



VII. Support specifications

A. Leap support center

The Leap Support Center handles all enquiries on how to use the service by e-mail, except for emergency calls when the system is down. Leap Support Center is available in both English and Thai.

1. General issue inquiry

Reception Hours	Working hours (8x5)
Contact Information	Phone: (+66) 2-080-9888 E-mail: helpdesk@tcc-technology.com
Enquiry type	Service specifications Clarifying any service explanation details Other technical enquiries
Languages Support	English and Thai

2. Commercial inquiry

Reception Hours	Working hours (8x5)
Contact Information	Phone: (+66) 2-838-8888 E-mail: sales@tcc-technology.com
Enquiry type	Changes, termination, and customized orders. General enquiries
Languages Support	English and Thai

3. Incident service request prioritization

The Incident Manager is responsible for ensuring that every incident and service request are prioritized. Priority consists of impact and urgency, has 5 levels, and is coded based on the following table:

	Impact	High	Medium	Low
Urgency				
High		1	2	3
Medium		2	3	4
Low		3	4	5

The resolution time of an incident or service request depends on its priority code and is calculated as follows:

Priority code	Description	Target Resolution Time	Target Service Desk Response Time
1	Critical	1 hour	15 mins
2	High	2 hours	30 mins
3	Medium	4 hours	1 hour
4	Low	8 hours	2 hours
5	Planned	24 hours	8 hours

Impact – business impact of an incident or a service request:

High	Medium	Low
>50% of customers of the service are affected	20% - 49% of customers of the service are affected	< 20% of customers of the service are affected

Urgency – how quickly the business needs a resolution:

High	Medium	Low
Immediately – Security Incident	In medium term – system down or error with available workarounds	In long term – system error or request which is not impacting production
System down or error without workaround		

Note: Change of priority – priority defined by a user can be overridden by the Service Desk upon LSA approval by the Service Level Manager.

4. Required information for inquiry

Required information	Your company name Your system administrator information Your system ID/Name that you contracted
-----------------------------	---

B. Emergency contact

Please direct your queries to the Operation Management Personnel with whom you have been assigned as Administrator.

Reception Hours	24 hours a day, 365 days a year
Contact Info.	Phone: (+66) 2-080-9888 E-mail: helpdesk@tcc-technology.com
Enquiry about	Failure or issue with service
Languages Support	English and Thai

C. Support scope

Support will be carried out, for failure concerning unique specifications for using the following products, by Leap GIO Private Service:

- VMware vCenter Server
- VMware vSphere Web Client
- VMware vSphere ESXi

D. Maintenance

1. Planned maintenance

Planned maintenance will be conducted for the purpose of maintaining service quality and expanding, maintaining, and preserving equipment. For planned maintenance that will not result in service being suspended, no announcement will be made. If planned maintenance will impact use of the service, notification by e-mail regarding the scope of the impact will be sent one (1) week prior to the contact e-mail address registered as the administrator. In addition, after the completion of the planned maintenance, an e-mail will be sent reporting the results to all customers who were sent e-mail notifications in advance.

2. Emergency maintenance

If it is determined by LSA that emergency maintenance is required for service equipment, LSA may conduct emergency maintenance without prior announcement (see below cases that apply). In this case, customers will be notified by e-mail after the maintenance is conducted. However, note that LSA will try to send notices for emergency maintenance when possible.

Emergency maintenance will be conducted in the following circumstances:

- When an emergency response is required for hardware failures even while service continues uninterrupted.
- When redundancy is lost due to service failure, and a suspension of service from multiple service failures that cannot be anticipated.
- When major security risks are discovered, and it is determined that an emergency response is necessary.
- When a security incident occurs, and an emergency response is necessary.

E. Notes

For security reasons, only pre-registered system administrators may contact Leap Support Center. Some or all functionality may be interrupted due to scheduled/emergency maintenance procedures. After accepting delivery of the service, you are responsible for all matters concerning security vulnerability.

VIII. Applying, changing, and cancelling

A. Lead time

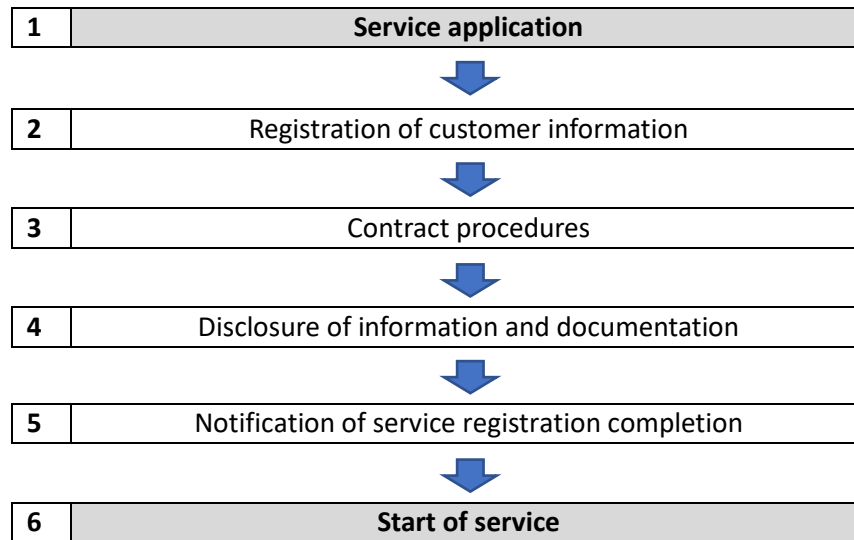
1. Time taken before servicing

The time required for service provision does not include the day on which the corresponding request is received. The time period below represents the number of days from the business day following the day of receipt by LSA of an application form that contains all the required items. The time required from the application for the Leap GIO Private service to the completion of registration is as follows:

Service	Contract Type	Time until service provision
Leap GIO Private	New order	3 business days

Note that the time required to start is an estimate based on our track record. It is not to be construed as a guarantee to deliver within the stated time period.

2. The flow process till the start of the service



3. Information sent to the customer

The following information will be sent to you via e-mail (or other means if necessary):

- Quotation / Service Specifications (this document) / General Terms & Conditions / Acceptable Use Policy
- Configuration Sheet
- Order Sheet
- Remote Access Guide
- User Guide

- Project Completion Report (To be returned signed to LSA after review)

4. Time taken for service change or cancellation

The time required to change/cancel a service varies by service and does not include the day of the request acceptance. The time period below represents the number of days following the receipt by LSA of a complete application form. The times required to change/cancel a service are as follows:

Service	Contract Type	Time Required
Leap GIO Private	Change	Depending on type of change
	Cancellation	One business day

B. Billing start time

LSA will start charging on the day the service becomes available to you.

C. Minimum contract period

The minimum usage period for the Leap GIO Private is 1 month.

D. Service change

If a change to order additional items is requested, a new quotation will be sent to you and it needs to be reviewed and signed back before any change can happen.

If a change to terminate any contracted items is requested, a request using our stipulated cancellation/termination form is required.

E. Service cancellation

If terminating the service, an application using our stipulated cancellation/termination form is required. After the day of termination, it will no longer be possible to log in to the service.

F. Reference

LSA General Terms & Conditions: <https://www.leapsolutions.co.th/terms>

LSA Acceptable Use Policy: <https://www.leapsolutions.co.th/acceptableusepolicy>

G. Disclaimers

This document is not intended to guarantee that the service will always be available for use.

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