Lumen Service Guide

Data Protect Backup – Dedicated

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This Service Guide ("SG") sets forth a description of Data Protect Backup 1.0 ("Service") offered by CenturyLink Communications, LLC d/b/a Lumen Technologies Group and its affiliated entities ("Lumen"), including technical details and additional requirements, if any. This SG is subject to and incorporated into the Agreement and either the Hybrid Technologies Service Exhibit (formerly the CenturyLink TS Service Exhibit) and the Hosting Schedule.

1. Service Description.

1.1 Data Protect Backup - Dedicated (the "Service") is a Lumen service that provides dedicated file backups via virtual machine (VM) for certain information or data that a Customer wants to retain. The backups are stored to disk within Lumen's managed environments that support the Service. As part of the standard Service, Lumen provides the installation, configuration, administration, monitoring, maintenance and support for the Service components described in section 1. The Service is available for use with the following Lumen services: Lumen Private Cloud on VMware Cloud Foundation, Dedicated Cloud Compute (DCC), and Foundation Hosting Services. The Service Level Agreement ("SLA") associated with this Service is the "Data Protect Backup - Dedicated SLA".

1.2 Service Components.

1.2.1 Backup: The Service provides support for Customers to backup their VCloud deployed VMs and interfaces with both VCloud and Vsphere. The Service includes backup of metadata generated from VCloud that captures vApp Name, Organization, Org vDC, Datastore, VCenter Server, and Virtual Machines with the vApp. Backup or restore operations of VMs without VCloud integration will not be visible via vCloud. Using the vCloud Aware Backups will provide the ability to backup and restore the vApps. The Service utilizes VM Image Backup and Restore operations for Customer's guest or secondary operating systems running on the VMs. The Service allows Customers to perform Full Backups and Incremental Backups, and both types of Customer backups will be retained on local disk in the Lumen managed environment. Customer is responsible for designating, within the Veritas NetBackup software, the period of time their backups will be stored; provided however, the Retention Policies in Section 2.7 below will apply. See Table 4.0 VM Image Backup and Restore Supported Operations. The Service is available for Customer's server and virtual machine operating systems ("OS"), VMware vSphere and vCloud Director virtualization platforms as detailed in Table 1.0 Supported Operating Environments. For the avoidance of doubt, the Service is not a disaster recovery service and does not support backup of Windows SystemState recovery.

Table 1.0 (a) - Supported Operating Environments

The following table details the operating systems and virtualization platforms that are supported with the Service.

Operating System	Architecture	Master Server Deduplication	Software Agent Deduplication
Windows 2008	X86	NO	YES
Windows 2008 R2	X64	NO	YES
Windows 2012	X64	NO	YES
Windows 2012 R2	X64	NO	YES
Windows 2016	X64	NO	YES
RedHat 5.x	X64	NO	YES
RedHat 6.x	X64	NO	YES
RedHat 7.x	X64	NO	YES
Suse SLES 11	X64	NO	YES
Suse SLES 12	X64	NO	YES
Solaris 10	SPARC	NO	YES
Solaris 11	SPARC	NO	YES
HPUX 11.31	IA-64	YES	YES
AIX 6.1	Power PC	YES	YES
AIX 7.1	Power PC	YES	YES

Table 1.0 (b)

Veritas NetBackup Version	Virtual Disk Development Kit (VDDK) Version	vSphere Versions	vCloud Director Versions
8.1.1	6.5.2 EP1	vSphere 6.5, 6.5 U1 vSphere 6.0, 6.0 U1, 6.0 U2, 6.0 U3 vSphere 5.5, 5.5 U1, 5.5 U2, 5.5 U3	5.5, 5.5.1, 5.5.2, 5.5.3, 5.5.4, 5.5.5, 5.5.6 5.1, 5.1.1, 5.1.2, 5.1.3 Service Provider Versions: 8.0, 8.0.1, 8.0.2, 8.10, 8.20, 9.0 5.6.5, 5.6.4, 5.6.3

1.2.2   Deduplication: The Service utilizes deduplication to maximize the storage capacity in the backup appliance, which is a hardware box that includes the software component, thereby reducing the overall amount of backup being stored on disk. Deduplication will be performed on the Customer's environment for the OS as detailed in Table 1.0 Supported Operating Systems. For Lumen Private Cloud on VMware Cloud Foundation and DCC, Lumen sets this up on Customer's behalf. For Foundation Hosting, Customer sets up.

1.2.3   Encryption: Lumen remotely activates/enables encryption by turning on the switch within the software as part of the standard Service. The encryption keys are generated and managed by the Veritas NetBackup software and Lumen does not have access to the keys. See Table 2.0 Encryption Policies for additional information.

Table 2.0 - Encryption Policies

Encryption Policies
Servers compatible with Veritas NetBackup 7.x or higher will perform encryption within the server and transfer encrypted data to the backup infrastructure server
Servers not compatible with Veritas NetBackup 7.x or higher will perform encryption at the backup infrastructure server only
Deduplication enabled server – The Blowfish encryption algorithm (key length 128) will be utilized. This encryption will automatically occur within the server.
Deduplication disabled server – The Blowfish encryption algorithm will be utilized for those servers that are not utilizing the deduplication feature of the product and will occur on the backup infrastructure server
AES-128 and AES-256 encryption algorithms are available. However, deduplication rates will be negatively impacted with the use of these algorithms, resulting in the need for more backups thus higher charges.

1.2.4   Restore: Restores of the information Customer has chosen to backup can be performed from unexpired Full Backups stored on local disk in the Lumen managed environment. When a Full Backup is run, it includes any Incremental Backups that occurred since the last Full Backup. For avoidance of doubt, Restores are performed from Full Backups and subsequent Incremental Backups only. For example, if the oldest unexpired backup is a Full Backup, then a Restore is possible to that date.

1.2.5   Infrastructure: The Service is hosted in a Lumen managed environment with secured access and redundant power.

1.2.6   Pricing Methodology:

A.   Non-Recurring Charge: A non-recurring charge will apply for installation and configuration.

B.   Monthly Recurring Charge: Monthly Recurring Charges (MRC) are based on the following storage amounts selected by the Customer as detailed in the Service Order: 9 TB, 36 TB, 75 TB, 140 TB, 206 TB, 271 TB, 480 TB, 720 TB, or 960 TB.

1.3   Installation:
Lumen will provide the installation tasks marked with an "X" in the Lumen column in Table 3.0 Roles and Responsibilities.

1.4   Configuration and Administration:
Lumen will provide the configuration and administration tasks marked with an "X" in the Lumen column in Table 3.0 Roles and Responsibilities.

1.4.1   Backup Frequency: Once backups are configured and active, the backups automatically commence on a daily basis. Backups are retained for a period of time designated by Customer within the Veritas Backup software. Once backups are disabled, the backed-up data will remain in storage according to the retention period designated by Customer in the Veritas Backup software. The Retention Policies set forth in Section 2.7 below will apply.

1.4.2   Backup Options: Backups are initiated by Customer via a ticket or by contacting the Lumen Help Desk.

1.4.3   Customer may request the following options through the ticket support process at no additional charge: (1) Backup Agents which are available for supported operating systems listed in Table 2.0; and Hot backup Agents which are available for Oracle, DB2, SQL Server, MS Exchange and SAP (UNIX & Windows); and (2) Reporting that may include Job Information (e.g. ID, Start/End Time), Status Code, Backup Size, Backup Type, Schedule Name, Policy Name, Server/VM.

1.4.4   Change Management: Lumen may modify the managed applications, systems, network and facilities used to provide the Service. Such modifications are subject to Lumen's change management process which includes risk assessment, completed test procedure, metrics for measuring progress, and back out procedures. The change management process will be followed prior to scheduling and implementation of such modifications.

1.5   Monitoring.
Lumen will provide the monitoring tasks marked with an "X" in the Lumen column in Table 3.0 Roles and Responsibilities.

1.6   Notification: Lumen will retain primary notification and resolution responsibilities for all automated environment alerts in the production environment.

1.7   Maintenance and Support:
Lumen will provide the maintenance and support tasks marked with an "X" in the Lumen column in Table 3.0 Roles and Responsibilities.

1.7.1   Maintenance Windows: All times listed under the Scheduled Maintenance Windows are local times and subject to change. Lumen will use commercially reasonable efforts to perform routine maintenance only during the Saturday or Sunday defined maintenance windows. See Definitions for additional information.

2.   Customer Responsibilities.
Customer is responsible for all tasks marked with an "X" in the Customer column in Table 3.0 Roles and Responsibilities as well as the responsibilities listed below in this Section 2. Customer acknowledges and agrees that its failure to perform its obligations set forth in Table 3.0 and in this Section 2 may result in Lumen's inability to perform the Services and Lumen will not be liable for any failure to perform in the event of Customer's failure.

2.1   Licensing and Third Party Terms: Customer agrees to allow Lumen to install necessary software to enable backup operations, monitoring and reporting. If any third party software, including any corresponding documentation, is provided to Customer by Lumen in connection with the Service, Customer agrees to be bound by any additional licensing terms and conditions applicable to such third party software and that it will use such third party software strictly in accordance with such terms and conditions. Lumen makes no representations or warranties whatsoever with regard to such third party software.

For Veritas Backup software, Customer must agree to the Veritas End User Agreement terms located at:
https://www.veritas.com/company/legal/license-agreements.

2.1   Customer Contact: Designate and maintain a Customer Contact during the Service Term (including current contact information). "Customer Contact" means a technical point of contact available 24x7 with sufficient knowledge, authority and access to address configuration issues, event notifications, system or infrastructure modifications and authentication of applicable Lumen systems.

2.2   Data Restores: Restores are initiated by Customer via a ticket, or by contacting the Customer Help Desk. Restores are performed with the assistance of the Backup Operations Team.

2.3   Customer agrees to provide a RHEL 7.x VM with the required vCPU, RAM and local storage disk for the installation and operation of the Veritas NetBackup Master Server software. This VM is required to operate 24x7x365.

2.4   Change Notification: Customer agrees to notify Lumen of any changes in Customer hardware, including any system configuration changes or any hardware or software upgrades, which may affect the Services provided. Customer's failure to notify Lumen

of changes will affect Lumen's ability to perform the Services in which case no SLA Credits will apply.

2.5 Acknowledgements: Customer acknowledges and agrees that the Service will backup the information designated by Customer in the form it is received from Customer and Lumen has no responsibility whatsoever regarding its accuracy or integrity.

2.6 Retention Policies: Any retention period designated by Customer is a policy that Customer may assign to the particular information only and will not be construed as a contractually binding retention period for Lumen. If the retention period designated by Customer extends beyond the Customer's Service Term or if Customer or Lumen terminate the Services prior to expiration of the Service Term, Customer acknowledges that Lumen has no further obligation to back up and store any Customer metrics or data after Agreement expiration or termination (notwithstanding any retention period selected by Customer) and Lumen will automatically delete all logs, including backups. Customer acknowledges and consents that it is solely Customer's responsibility to make copies of or obtain the logs and any other Customer data prior to expiration or termination of the Agreement.

2.7 Termination: Upon the effective date of termination for any reason, Customer will have no further access to the Service and their data, including data with retention policies that extend beyond the termination date. Customer is responsible for downloading all data they wish to have in their possession prior to Service termination.

2.8 SLA: Lumen's SLA only applies to the respective vendors' supported configurations at the time SLA support requests are triggered. If any configuration, version, system or third party software is identified as "unsupported" by a vendor, Lumen's SLA (including availability of Service Credits) will no longer apply and any support by Lumen will be reasonable efforts only. In addition, and at Lumen's reasonable discretion: 1) Customer may be required to purchase vendor supported upgrades at an additional cost to allow Lumen to continue to provide the Services or; (2) Lumen may elect to charge the Customer for any support or additional tasks/work incurred resulting from Customers' continued use of an unsupported configuration. Customer acknowledges and agrees that it is solely responsible for selecting and ensuring its software and systems are up to date and supportable. Customer's failure to do so may result in Lumen's inability to provide the Services and Lumen will have no liability therefrom.

2.9 Data Transfer Consent: Customer consents to Lumen's and its affiliates' or subcontractors' use and transfer to the United States, or other countries, data or information (including business contact information such as names, phone numbers, addresses and/or email addresses) of the customer for the sole purpose of: (i) providing and managing the Services; (ii) fulfilling its obligations under the Agreement; and (ii) complying with applicable laws. Customer represents that it will ensure that all information provided to Lumen is accurate at all times and that any business contact has consented to Lumen's processing of such information for the purposes identified in this SG.

2.10 Data Access: Customer consents to Lumen collecting and compiling system and operational metrics to determine trends and improve service capabilities. Lumen may associate this data with similar data of other Customers so long as such data is merged in a manner that will not in any way reveal the data as being attributable to any specific Customer. Customer acknowledges Lumen's access to Customer data is generally limited to machine/system generated information and/or metrics, however if required as part of Lumen's obligation to provide the Service, or requests by Customer, Lumen may have access to Customer data, including personal information.

Table 3.0 Roles and Responsibilities

Activity	Task	Lumen	Customer
Installation	Create a vCloud, vCenter Server user account with privileges to deploy an OVF template on the Lumen Private Cloud on VMware Cloud Foundation or DCC vSphere software agent and perform API calls sufficient to perform backup.	X	
	Provide a RHEL 7.x VM with the required vCPU, RAM and local Storage disk from the Lumen Private Cloud on VMware Cloud Foundation or DCC environment for the installation and operation of the NetBackup Master Server.		X
	Install the dedicated backup hardware and software infrastructure	X	
	Install the network connectivity (i.e. the local data center connections) between the backup appliance and Customer's environment	X	
	Install RHEL 7.x NetBackup Master server from template	X	

	Make required adjustments to management devices and declare Service fully operational	X	
Configuration	Configure the presentation of ESXi Datastore LUNs to the backup appliance which consists of a hardware box that includes the software component	X	
	Turn On/Off backups via backup management interface	X	
	Determine backup frequency timeframes		X
	Determine backup policy requirements.		X
	Activates/Enables encryption	X	
	Establish backup policy and determine the appropriate response procedure	X	
	Answer Customer's questions regarding the Service	X	
	Perform Full and Incremental Backups	X	
Monitoring	Retain primary notification and resolution responsibilities for alerts	X	
	Monitor the Lumen infrastructure used to provide the Service	X	
Maintenance and Support	Provide 24/7 support for Service problem resolution and Customer inquiries	X	
	Ensure that all Customer permissions of any kind needed for the delivery of the Service are in place at all times		X

Table 4.0 VM Image Backup and Restore Supported Operations

Protect Customer VMs in their vApps
Backup of vApp
Backup of VM
Restore of vApp to new vApp
Restore of vApp to vApp (After Delete of vApp)
Backup of restored/new vApp
Restore of VM from vApp to Alternate vApp
Restore of VM with Overwrite of Existing VM in vApp
Restore of VM & vApp after Delete of Target vApp
Scheduling and retention as required
VM/vApp selection as required. VMware Intelligent Policy provides for dynamic selection of VM/vApp. Individual VM/vApp may be selected, selection via the naming convention, or selection of all vApps

3.   Definitions.

Backup Window: Scheduled time period during which backups should be started.

Full Backup: Complete save of Customer chosen data files by the applicable software agent or plug-in used with the Service.

Incremental Backup: Backup of all data files that are new or that have changed since the last Full or Incremental Backup.

Maintenance Windows: Lumen will use commercially reasonable efforts to perform routine maintenance only during defined maintenance windows. See our published Maintenance Window schedule, or navigate to https://www.ctl.io/legal/managed-hosting/maintenance-windows/ from any Internet browser. Lumen has the right to perform scheduled maintenance (during the windows specified), which may limit or suspend the availability of the Services. Lumen maintenance notifications may be available on the portal at https://sso.ctl.io/oxauth/login.

Restore: Copying backup data from storage to the original source to return data to its original condition.

SystemState: A Windows SystemState backup is specific to Microsoft and generally includes a copy of any installed device drivers and related files, the Windows Registry, the Active Directory configuration (where applicable) and some system files. It is not a full backup of the operating system and while it may include some similar information to that of a VM Image backup, SystemState backups are out of scope for this Service. Customer is solely responsible for any SystemState backups.