

CenturyLink Technology Solutions Service Guide

Managed Server 1.0: Managed Server Foundation Hosting

This Service Guide (“SG”) sets forth a description of the CenturyLink Foundation Hosting Service (the “Service”) offerings including technical details and additional requirements, if any. This SG is subject to and incorporated into the Agreement and Service Schedule between the parties. The specific details of the Service ordered by Customer will be set forth on the relevant Service Order. The specific details of the Service ordered by Customer will be set forth on the relevant Service Order. For avoidance of doubt, any references in the Agreement, Schedules, or Service Orders to SSG, shall mean SG.

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Foundation Hosting Service

1. Standard Service Description: Managed Server 1.0: Managed Server (i.e. Foundation Hosting) is a managed hosting service. The standard “Service” consists of the installation, configuration, administration, monitoring, maintenance and support (the “Management”) for the Components described in Section 1.0. The Service Level Agreement (SLA) associated with this Service Guide is the “Managed Hosting Services SLA”.

1.1. Standard Service Components

1.1.1. Server Hardware: Dedicated physical computing hardware consisting of various CPU/processor, hard disk drive, and RAM memory values as selected by the Customer. Unless otherwise noted, each server is equipped with redundant power supplies. Once the Foundation Hosting node(s) are deployed, the Customer may use a CenturyLink-provided hardware interface to supply their own operating system, application software and respective licenses to complete the solution to meet their business needs. CenturyLink does not provide any licensing of Customer-provided operating systems, software or services with the Foundation Hosting Service.

1.1.2. Secure Physical Space: The Service is hosted in a CenturyLink managed Data Center with secured access

1.1.3. Hosted Area Network (HAN)

1.1.3.1. HAN/VLAN Ports: CenturyLink provides a single (redundant available upon request) physical Ethernet connectivity to the Hosting Area Network. **For customers who purchase Internet access,** CenturyLink also provides access to a shared IP transit VLAN at the routing gateway of the HAN and a single VLAN per Customer per Data Center. Available VLAN Options are detailed in Table 2.0. Customer can purchase additional VLANs if needed (see Section 3.0) All backbone networking infrastructure is redundant.

1.2. Installation CenturyLink will provide installation tasks marked with an “X” in the CenturyLink column in Table 1.0 Roles and Responsibilities.

1.3. Configuration: CenturyLink will provide configuration tasks marked with an “X” in the CenturyLink column in Table 1.0 Roles and Responsibilities.

1.4. Administration: CenturyLink will provide administration tasks marked with an “X” in the CenturyLink column in Table 1.0 Roles and Responsibilities.

1.4.1. Access: CenturyLink provides hardware management for all Foundation Hosting servers. In order to provide this additional level of management, CenturyLink must maintain full Administrator access to the Foundation Hosting server. CenturyLink also creates additional individual hardware interface accounts for Customer access as needed. All hardware interface actions are logged. Should the hardware configuration be altered or reset by the Customer, the SLA will not apply and CenturyLink will charge a setup fee to reconfigure hardware access to CenturyLink standards.

1.4.2. Remote Customer Access: Customer will be provided with a remote Root/Console user interface, depending on hardware selected and available hardware interfaces, eliminating the need for physical access and allowing remote installation of operating system and applications by Customer. In addition, Console user/password federation management is managed by CenturyLink to allow a single Console user access to multiple servers as needed.

1.5. Monitoring: CenturyLink will provide administration tasks marked with an “X” in the CenturyLink column in Table 1.0 Roles and Responsibilities.

1.5.1. Monitored Object Credits: As part of the standard Service, Customers are given credits for Monitored Objects (see Definitions). CenturyLink provides three monitoring credits with each Managed Server. Credits can be used for URL, TCP and ICMP (see Definition) monitoring. Customers create automatic notification monitors in the Customer web portal. Two credits are required for each

URL monitor and one credit is required for each TCP/ICMP network monitor. Additional monitoring credits can be purchased as needed (see Section 3.0).

- 1.5.1.1. **URL monitor.** Customer chooses the type (Content Match, Form Test, Authentication Test, or Transaction Thread). See Table 3.0 for additional information.
- 1.5.1.2. **TCP Port Check:** Checks the device from an Internet perspective and measures whether the device is available and responding. This form of monitoring ensures that the process or service is running and accepting requests on the network.
- 1.5.1.3. **ICMP:** ICMP (ping) monitoring checks the device from an “Internet” perspective and measures whether the device is available. This form of monitoring ensures that the device is active and available on the network.

1.6. Maintenance and Support: CenturyLink will provide administration tasks marked with an “X” in the CenturyLink column in Table 1.0 Roles and Responsibilities.

- 1.6.1. Change Management:** All changes to the CenturyLink managed applications; systems, network and facilities are subject to CenturyLink’s change management process. This process is intended to confirm that work is reviewed for completeness (risk assessment, completed test procedure, metrics for measuring progress, back out procedure, etc.) and accuracy prior to scheduling and implementation.
- 1.6.2. Maintenance Windows:** A period of time designated in advance by CenturyLink, during which preventive maintenance that could cause disruption of service may be performed. See agreed upon and current SLA documentation for specifics
- 1.6.3. Repairs:** CenturyLink maintains all managed servers including repair and replacement of defective or failed hardware and the installation of hardware upgrades, as needed. At its discretion, CenturyLink may subcontract support to the manufacturer or equivalent vendor in order to expedite repairs.
- 1.6.4. Support:** Support for the Service is provided through the project manager during installation, content migration and Customer validation. At the point of go-live the Service is passed from project management to CenturyLink Service Center for full 24x7 monitoring and management. The point of go-live is when Customer notifies CenturyLink project manager that the environment is ready to go-live.
- 1.6.5. End-of-Support:** If any provider software or hardware no longer supports any version of software or hardware provided by CenturyLink as part of the Service, and Customer opts to continue its use, CenturyLink will use commercially reasonable efforts to continue providing the Service, however the Service Level Agreement (SLA) will no longer be applicable for the applicable hardware or software.

2. Customer Responsibilities: At Customer’s option and expense Customer can choose to have CenturyLink complete one or more of the tasks in Table 1.0 with an “X” in the Customer column and/or the services listed below. The items can be added to the standard Service (described in Section 1.0) for an additional fee described in a separate Statement of Work (“SOW”) or Service Order. Contact a sales representative for additional information.

- 2.1. Provide 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 CenturyLink systems.
- 2.2. Operating System:** Operating system and application licensing, installation, configuration, monitoring and management are the responsibility of the Customer with Foundation Hosting Services. Failure to install the operating system will not delay the start of billing for the Foundation Hosting service.
- 2.3. Additional Terms:** Customer will not assert any ownership interest whatsoever in the equipment or related software provided by CenturyLink or its licensors (“CenturyLink Equipment”). Customer will keep the CenturyLink Equipment free and clear from all liens, claims and encumbrances. Customer will take all such actions as reasonably determined by CenturyLink to be necessary to protect CenturyLink’ interest in the CenturyLink Equipment

- 2.4. Compatibilities:** Customer is responsible for verifying hardware and software configuration capability. CenturyLink can provide further guidance to ensure compatibility between customer-needed software and CenturyLink infrastructure and hardware. Customer acknowledges and agrees that its failure to verify hardware, may result in CenturyLink's inability to perform the Services and CenturyLink shall not be liable for any failure to perform in the event of Customer failure.
- 3. Service Add-Ons:** At Customer's option and expense Customer can choose to have CenturyLink complete one or more of the tasks in Table 1.0 with an "X" in the Customer column and/or the services listed below. The items can be added to the standard Service (described in Section 1.0) for an additional fee described in a separate Statement of Work ("SOW") or Service Order. Contact a sales representative for additional information.
- 3.1. Springboard Service:** A Springboard Server is a recommended purchase option for Foundation Hosting Service customers (see Definitions).
- 3.2. Host Bust Adapters (HBAs):** Customers who wish to connect their servers to CenturyLink's Utility Storage service, or wish to connect their server to any fibre channel-based servers, may add Fibre Channel HBAs. HBAs are single ported, 4 Gbps cards that are deployed in pairs for redundancy. All HBAs are subject to compatibility with CenturyLink infrastructure.
- 3.3. Load Balancing and SSL Acceleration:** Provides load balancing and SSL acceleration services to the Hosting Area Network via optional managed dedicated or Virtual Services solutions. Server load balancing is the process of distributing service requests across a group of servers to address Customer requirements to optimize web applications performance. SSL acceleration is the process of offloading the processor-intensive public key encryption algorithms involved in SSL transactions to a hardware accelerator.
- 3.4. Customer Access Extension:** CenturyLink colocation Customers who wish to interconnect their colocation-based local area network with the CenturyLink HAN may purchase this service. Cross-connects are available in CAT5 and fiber-based connections. HAN Port activations must be purchased separately. The Customer Access Extension service provides a Gigabit-based Ethernet cross-connect from the HAN to a Customer's colocation-based network.
- 3.5. HAN Port Activation:** Each Foundation Hosting server comes with One Gigabit Ethernet hardware interfaces on each server. Customers that require physical connectivity to the HAN may request a GigE HAN port activation(s).
- 3.6. Additional Network Interfaces:** For Customers who wish to have additional physical HAN ports on their server; network interface expansion cards may be added to the server. Expansion cards are available in single, dual and quad port configurations. These additional network interface cards also require GigE HAN activation(s).
- 3.7. URL, TCP, and ICMP monitoring credits:** Customer can purchase additional credits see Section 1.6.3.
- 3.8. Internet Bandwidth:** CenturyLink uses the CenturyLink Internet Backbone for Internet transit services. CenturyLink manages and monitors all connectivity points both within the Data Center and on the CenturyLink Internet backbone. CenturyLink Data Centers are pre-provisioned with Ethernet cabling from the aggregation switch to each rack to minimize implementation timeframes and accidental disruption of service from build-outs in the Data Center. Managed Hosting Customers that use the Internet to provide access to their hosted applications must have a burstable Internet component included with their solution. Packets moving to or from the Public Internet are charged for separately as a HAN service.
- 3.9. Cloud Network Services (CNS):** Cloud Network Service is a carrier-neutral, network-to-network interface that provides private IP connectivity to cloud services from any cloud service provider. With Cloud Network Service, CenturyLink offers intra-datacenter fiber cross-connect services to customer colocation cages, CenturyLink IQ services, and MPLS connections from other carriers. It can also be used to connect to CenturyLink Cloud's environment from various endpoints within CenturyLink Technology Solutions HAN network. These connections are then passed over a redundant, high-bandwidth connection to the any cloud service provider infrastructure.
- 3.10. Foundation Hosting within a Customer Colocation Cage:** For Foundation Hosting services installed within a Customer's colocation cage or otherwise outside of the CenturyLink Managed Hosting area in the CenturyLink data center, the following additional restrictions shall apply: Foundation Hosting may not

include hardware interface-managed network and services associated with it as described herein. Foundation Hosting shall not include and is not subject to the physical security and access controls provided within the CenturyLink Managed Hosting area of the CenturyLink data center. Customer shall provide CenturyLink with unfettered access to the Foundation Hosting servers. Failure to provide such access shall be deemed an Excluded Event in the event of a Service Level failure. Customer shall bear full responsibility for the payment of additional charges and fees resulting from Customer's failure to provide such unfettered access to CenturyLink or if extraordinary access methods are required.

3.11. Data Protect Backup: CenturyLink Data Protect Backup Service is a data protection service that includes the use of storage area network services, hosting area network services, and managed security services (where applicable) in a multi-tenant self-service environment. CenturyLink will specify required backup agent or equivalent functionality, including any required updates/upgrades as needed. See Data Protect Backup Service Guide for additional information.

Table 1.0 Roles and Responsibilities

Activity	Task	CenturyLink	Customer
Installation	Provide dedicated bare-metal server(s) with various CPU, HDD, RAM configurations	X	
	Provide power for servers along with surge protection and backup power	X	
	Specify Customer-specific needs of server(s)		X
	Sign off on the Environment, confirm go live		X
Configuration	Configure DNS, HTTP and NPT services if directed to do so by Customer	X	
Administration	Use Root/Console hardware interface for remote installation of operating system and all applications		X
	Manage console user/password account federation to add or remove console users as requested by Customer	X	
	Manage all licensing using provided hardware interfaces		X
	Maintain any web addresses and licensing rights DNS & IP Address Service		X
Monitoring	Perform all hardware monitoring		X
	Display CenturyLink staff modification/access information in audit logs	X	
	Access Customer portal for reporting and issue tracking		X
	Receive alerts when pre-set thresholds are	X	

Activity	Task	CenturyLink	Customer
	exceeded		
	Generate proactive notification of expected service interruptions related to Hardware	X	
	Receive Alerts for additional URL, TCP, ICMP monitors		X
Maintenance and Support	Maintain Audit Log of Customer user access/modification	X	
	Generate proactive notification of anticipated service interruptions	X	
	Initiate hardware repairs by opening a trouble ticket with CenturyLink		X
	Perform installation of hardware upgrades as needed	X	
	Maintain all managed servers including repair and replacement of defective or failed hardware	X	
	Provide break/fix service via trouble ticket for failed hardware replacement	X	
	Use industry-standard hardware diagnostic tools to identify hardware failures and replace hardware as necessary resulting from trouble tickets	X	
	Generate email notifications of scheduled maintenance to Customer technical contacts in time to provide 48-hours (two business days) notice to Customer	X	

Table 2.0 URL Check Options

Option	Description
Content Match	Checks a URL for known content. If the content is not in the returned response, then an alarm is created. This test can also measure the latency in a response and create an alarm based on its time to respond
Form Test	This is a two-step URL monitor. The monitoring service submits a completed web-based form and then performs a Content Match on the response. If the Content Match fails, an alarm is created
Authentication Test	This monitoring function handles dialogue boxes that are presented in some web-based applications for authentications, for example Microsoft Outlook Web Access. If the authentication is not accepted, an alarm is created
Transaction Thread	This is a series of the three types of URL Monitors to create a series of events to monitor a complete transaction from beginning to end

Definitions

Administration Access: A user account that lets you make changes to settings, install software and hardware, and access all files on the computer.

CenturyLink Service Center: The primary organization for resolving infrastructure issues that is staffed 24/7/365 to respond in a timely manner to incidents and requests pertaining to Customer IT infrastructure.

Data Center: The facility in which the Systems are located.

Dedicated Physical Server: Hosted single-tenant infrastructure that can be highly customized to your network, storage, and hardware specs.

Domain Name System (DNS): A hierarchical distributed naming system for computers, services, or any resource connected to the Internet or a private network. It associates various information with domain names assigned to each of the participating entities. Most prominently, it translates easily memorized domain names to the numerical IP addresses needed for the purpose of locating computer services and devices worldwide. The Domain Name System is an essential component of the functionality of the Internet.

Foundation Hosting: A managed server service that includes use of (a) a dedicated standalone server provided and owned by CenturyLink, (b) space and power for the server, (c) network connectivity, and (d) failed server hardware replacement services, which are initiated in response to a trouble ticket opened by the Customer.

Foundation Hosting Springboard Server: A managed virtual machine designed to provide a persistent storage location for Foundation Hosting disk images with Fast Ethernet access to the HAN for interacting with Foundation Hosting servers via HP Integrated Lights-Out (iLO) tools. Springboard Servers are designed to provide a persistent location for Foundation Hosting service Customers to store disk images for their Foundation Hosting servers. Storage for Springboard servers is purchased separately via the Unified Storage Service. A Springboard server may be a virtual machine located on a CenturyLink managed virtualized server or it may be a separate physical server. The Springboard server is physically located in the same data center as the Foundation Hosting servers and has private IP network access to the HP Integrated Lights-Out (iLO) or equivalent interface in the Foundation Hosting servers via the CenturyLink HAN. Operating system-based services, including remote desktop, secure copy and secure file transport protocol, are enabled to ease the ability of Customer access the Springboard server and upload disk images. The operating systems for the Springboard server are Windows 2003 and Windows 2008, which are licensed, managed and monitored by CenturyLink. CenturyLink prohibits Customers from using this service for anything other than its intended use. If the Customer chooses not to purchase the Springboard Service, an alternative means to access the private IP address of the Foundation host is required if the Customer wishes to store disk images.

HP Integrated Lights-Out (iLO): A suite of embedded management technologies that supports the complete lifecycle of all HP ProLiant servers, from initial deployment to ongoing management and service alerting.

Hosting Area Network (HAN) means the managed networking infrastructure that supports CenturyLink Managed Hosting services.

ICMP: Internet Control Message Protocol (ICMP): is a network protocol useful in Internet Protocol (IP) network management and administration. ICMP is a required element of IP implementations. ICMP is a control protocol, meaning that it does not carry application data, but rather information about the status of the network itself. ICMP can be used to report: errors in the underlying communications of network applications, availability of remote hosts or network congestion.

Intelligent Hosting: Means a managed server service that includes use of a dedicated standalone server, space and power for the server, operating system license, network connectivity, management and monitoring of the server hardware and operating system.

Managed Hosting means the set of CenturyLink managed server services that include Foundation Hosting, Intelligent Hosting and Utility Compute.

Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks.

Operating System: An operating system (OS) is software that manages computer hardware resources and provides common services for computer programs. The operating system is an essential component of the system software in a computer system. Application programs usually require an operating system to function.

Proxy Server: proxy server is a server (a computer system or an application) that acts as an intermediary for requests from clients seeking resources from other servers. A client connects to the proxy server, requesting some service, such as a file, connection, web page, or other resource available from a different server and the proxy server evaluates the request as a way to simplify and control its complexity.

SLA Credit: Service Level Agreement Credits are refunds given by CenturyLink to a Customer if the service falls below a contractually agreed service levels. See Section 1.0 for the SLA agreement associated with this service.

Statement of Work: A statement of work (SOW) is a formal document that captures and defines the work activities, deliverables, and timeline a vendor must execute in performance of specified work for a client. The SOW usually includes detailed requirements and pricing, with standard regulatory and governance terms and conditions.

Systems: The computer equipment and software that is approved by CenturyLink and utilized by the Customer in connection with the provision of Service by CenturyLink.

TCP: Transmission Control Protocol is a set of rules (protocol) used along with the Internet Protocol (IP) to send data in the form of message units between computers over the Internet. While IP takes care of handling the actual delivery of the data, TCP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient routing through the Internet.

URL Monitoring: Uniform Resource Locator (URL) monitoring checks the Web site from an internet perspective and measures whether the page and content are delivered. URL Monitoring latency thresholds can be set between 35 seconds and 90 seconds. By default, Polling intervals are every three minutes. The additional process of checking for page content has the effect of checking whether customer applications and databases are available. This is accomplished by selecting content to be monitored that is generated by an application directory or database. If it is confirmed that the expected content is delivered with the page, then it can be confirmed that the Web server and the application or database are all in working order. URL Monitoring checks the Web site from an "Internet" perspective and measures whether the page and content are delivered. The additional process of checking for page content has the effect of checking whether Customer applications and databases are available. This is accomplished by selecting content to be monitored that is generated by an application directory or database. If it is confirmed that the expected content is delivered with the page, then it can be confirmed that the Web server and the application or database are all in working order.

Utility Compute: A managed server service that includes use of a dedicated server within a collection of servers, space and power for the server, operating system license, network connectivity, use of storage services on a managed storage area network, management and monitoring of the server hardware and operating system.

Utility Storage: A CenturyLink managed storage service that includes use of a storage area network, which is provided and managed by CenturyLink.

Virtual Routing and Forwarding (VRF) allows Customers to keep their environments separate, while sharing a common infrastructure.