NCR VOYIX

Aloha Cloud Point-of-Sale

Electrical, Network, and Internet Requirements

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Revision Record

Date	Version #	Description
11/20/2023		Converted the document to use new templates.
9/11/2024		Added Firewall Parameter section.

Contents

Introduction

The Aloha Cloud POS software is an enterprise capable software for supporting standard and advanced functionality within a hospitality environment. The purpose of this guide is to provide recommendations, best practices, and a checklist to help you implement the standards for your organization, as well as optimization practices to give you excellent service from the NCR products.

Reference
Refer to the Aloha Cloud Point-of-Sale Network Configuration Guide - HKS1769 for the suggested configuration of ports and white-listed web addresses.

Audience

This guide is aimed toward answering Aloha Cloud installation preparation questions from NCR customers.

Summary

A well designed electrical and network foundation with stable Internet connectivity is core to a high performing Aloha Cloud installation. This document provides a quick summary of requirements, as well as detailed instructions for implementation.

Aloha Cloud solution requirements

Electrical requirements

Item	Required
Power lines	Dedicated and Isolated Ground 15A electrical circuits
Voltage	Tested and providing 120 V +- 5 volts (US)
Clearly marked outlets	Each outlet should be identified by using a Type B Orange Hubbell Type outlet
Server location	Quad and Duplex Orange Power Outlet (6 available sockets)
Terminal or kitchen station	Duplex Orange Power Outlet (2 available sockets)
Printer location	Simplex or Duplex Orange Power Outlet (1 or 2 available sockets)
Power conditioner (UPS)	Power conditioner with Uninterruptable Power Supply (UPS) for Aloha Cloud Server recommended. Also recommended for POS terminals and kitchen stations. (All POS computer devices

Electrical detail

Computer based POS software runs on state-of-the-art hardware platforms designed to provide efficient and trouble-free operation. To maximize system reliability, give careful attention to the electrical power source supplying this equipment.

The server location has the most outlets available because this location will usually host your firewall, switch, server, monitor and perhaps power-over-ethernet (POE) injectors for your wireless access points.

Key points to consider when installing the electrical circuits powering the system:

- Dedicated - The NCR equipment should run on a dedicated circuit which has its very own circuit breaker, and only supports one outlet. All circuits must have separate neutral and ground wires the full length of the run with no other circuits sharing them at any point.
- Isolated Ground – By isolating the ground from other equipment with motors (freezers, air conditioners, beverage coolers), the power will be "clean" without the surges and spikes created by these devices. All ground wires must go to an isolated grounding bar inside the panel, with a wire going to the main panel ground bus. If this cannot be done, use a cold-water pipe, if a return wire is run back inside the panel to a ground bus on the panel frame.
- Clearly Marked Outlets - Terminate all circuits with an isolated ground (Hubbell type) receptacle, identified by an orange face.
- Verified Power - Prior to power circuit installation, verify that there is adequate power source available. After power circuit installations, verify proper voltage (120v +-5v) and grounding.

Power conditioners are recommended for trouble-free operation. These devices help ensure the delivery of the proper power and help increase the life expectancy of your POS hardware. These devices do not protect against every possible electrical issue. Low voltage issues (brown outs) may still damage sensitive POS equipment. NCR recommends the use of Uninterruptable Power Supplies (UPS), which provide clean power and the ability to shut down gracefully in the event of a power loss.

Network wiring requirements

Item	Required
Cable type	Cat 5e or better (4 pair twisted with jacket)
Patch panel	IEEE 802.3ab standard
Wire sequence	568B wiring sequenc
Jack type	RJ45 female
Length	No more than 50 meters per cable run
Server	One data line
Terminal	One data line each
Printers/kitchen station	One data line each – Network printers required for handheld wireless tablets / devices.
Mounting and connection	Wall plates minimum 16" from floor. Counter access holes 2" minimum.

Network wiring detail

As with electrical, data cable specifications are equally important, and should be strictly followed to ensure a long stable life for Aloha Cloud.

Key points to consider when installing the data cabling:

- All cabling must adhere to local building codes.
- UTP CAT5e or better - 4 Pair Twisted Type Data Cable (PVC or Teflon jacket, according to fire code).
    - In areas where cables may receive interference by either electrical, radio, or a physical nature, run the data cables in a metal conduit.
- All cables should terminate at the network patch panel. Install a CAT5e or better patch panel with enough ports to accommodate existing and possible future additions to the system. Cables must be individual and cannot be split.
- The patch panel should be at the location and within 7 feet of the network switch.
- The NCR Aloha Cloud Server and network switch do not have to be in the same space. If the patch panel and network switch are in a room other than the file server, you must also have a duplex electrical outlet available to power the network switch and run two data lines to the NCR Aloha file server from the patch panel.
- We recommend the patch panel has a few unused ports available for future use. Patch panels usually come with ports in multiples of 12. A IEEE 802.3ab standard patch panel will allow gigabit communication speeds between equipment when paired with category 5e or category 6 cabling.
- Standard CAT5e or better compliant punch down using 568B wire sequence. This can be a wall plate or surface mount FEMALE receptacle. Label these to match the patch panel. Because we loop cables, each cable run must not exceed 160 feet (50 meters). If you feel this could be an issue, please discuss in detail with the Project Lead.
- Terminations and electrical outlets should be located no less than 16 inches from the floor with minimum 2" diameter access holes cut in any installed counters to facilitate POS terminal wiring.
- These receptacles should be no greater than 36 inches from the POS component.
- Terminations must be labeled using a wall plate. Surface mount boxes are also acceptable, but not ideal. Terminated loose cables are not acceptable.

If terminals and/or printers are being wall mounted, then the necessary adjustments to the placement of the electrical and data terminations must be made to ensure a clean, aesthetic look, without wires hanging down the front of the wall. Terminal/printer wall mount will be provided for a contractor to install prior to site inspection. Hardware dimensions can be supplied upon request.

- POS order terminals, kitchen video stations and Printers require one cable run to the main patch panel for each device. They must be FEMALE terminated.

Network equipment

Item	Required
Firewall	Business class firewall
Switch	Unmanaged or Managed (depending on network design)
Printers	Network Printers if site uses wireless Axium or Tablets
Unified Wireless	Access Points with Unified Management

Firewall

Firewalls provide protection against outside cyber attackers by shielding your computer or network from malicious or unnecessary network traffic. Firewalls can also prevent malicious software from accessing the point-of-sale system via the internet. Firewalls can be configured to block data from certain locations (i.e., computer network addresses), applications, or ports while allowing relevant and necessary data through. A business class firewall with have additional configuration options and software updates that may not be available on a residential class firewall. Remember, this is your business and assets that you are protecting. NCR has a Network and Security Services (NSS) group that can provide a business class firewall pre-configured for use with Aloha Cloud for an additional monthly fee, if needed.

Firewall parameters

NCR Voyix Aloha Cloud understands the need for enhanced security measures and design our services and products to work with most firewall or proxy servers you might use, promoting a safer network connectivity environment. Some routers do not require you to configure ports for NCR Aloha Cloud to operate successfully. In some instances, such as a managed firewall, you may need to configure additional ports for the successful operation of your POS.

Switch

The switch moves traffic between the wired devices and access points on your network. There are two main types of switches:

- Unmanaged – An unmanaged switch connects Ethernet devices together into a local network and has a fixed configuration which cannot be customized. An unmanaged switch is “plug-and-play”.
- Managed - A managed switch allows you to manage, configure, and monitor the settings of your local area network (LAN). This includes controls over LAN traffic, prioritizing certain channels, and the ability to create virtual LANs (VLANs) to keep smaller groups of devices segregated and to better manage their traffic. A managed switch will need to be configured by a network professional.

Printers

If your site is using mobile point of sale equipment, like Axium handheld devices or tablet point of sale devices, network connected printers should be used. This will allow the handheld device to

connect to the printer through the network. Legacy USB printers attached to other terminals will not be able to print network directed printing tasks from wireless handheld devices.

Unified wireless

Your network design should include unified wireless access points, which allow management of multiple access points from one web-based dashboard or control panel. Instead of each access point being configured individually, unified systems allow centralized configuration of your network and wireless settings and these settings are "pushed" out to the access points. The wireless devices are aware of each other and work together to avoid wireless conflicts and seamlessly allow devices to roam between them.

Summary

A well-designed network will serve your business for years to come while minimizing support issues. If assistance is needed in designing a quality network, discuss NCR Network and Security Services (NSS) with your NCR account representative.

Network wireless requirements and settings

Item	Required
Wireless Standard	Wireless AC (WiFi 5) or AX (WiFi 6)
Band	5 GHz
Channel Width	20 MHz
Guest Network	Guests segmented from business network and on 2.4 GHz
Disable Mesh	Do not use wireless mesh networking
Wireless Controller	Cloud Managed Unified Wireless
Channel	Managed Channel Selection to minimize interference
Multiuser	MU-MIMO
Planning	Heat Map to ensure adequate coverage

Network wireless detail:

Wireless AC (WiFi 5) and AX (WiFi 6) - The network wireless needs to be at the AC (Wifi 5) or AX (WiFi 6) standard. Wireless AC and AX rely on the 5 GHz network, so the network should be optimized for that band's requirements. Wireless AX is backwards compatible with the AC standard.

5 GHz - 5 GHz supports wireless AC and AX. This band has 23 non-overlapping channels and allows far more flexibility for site channel design. 5 GHz works to the benefit of the business network, as it decreases interference from other businesses nearby and allows smoother transitions between access points.

Channel Width - Set the wireless to 20 MHz, as this narrow channel width creates increased stability of the wireless connection at speeds consistent with NCR requirements.

Guest Network Design - Many hospitality companies contract with a third party to provide guest network services to avoid combining the networks and the management overhead. If you decide to manage and provide the guest network yourself, you will gain speed and reduce congestion by having all guests connecting to an SSID on the 2.4 GHz band and having it run at a lower network priority than your business traffic. The guest network must be on a different VLAN and subnet than your business network.

Guest Traffic Priority - Set up guest traffic to scavenger Quality of Service (QoS) priority to ensure business traffic has the priority or, at a minimum, increase business traffic QoS to a higher priority than guest traffic.

Disable Mesh - Do not use or implement a wireless mesh network. They introduce latency and reduce bandwidth, both of which are counterproductive. They also restrict channel usage to a shared channel, eliminating the best practice of separating channels used by access points. Please ensure, even if you're not using mesh, that capability is disabled on your wireless system. Some vendors, like Ubiquiti, enable mesh capability by default.

Wireless Network Settings - Configure the Aloha Cloud devices as full members of the POS network on the same VLAN, with same subnet and broadcast traffic access. While Meraki and other wireless systems can assign granular network access to Wi-Fi devices, the tablets and payment devices need to be treated from a network perspective just like a wired terminal. This allows proper communications with the printers and other network devices.

Unified Wireless Controller (UWC) or Wireless Lan Controller (WLC) - A Unified Wireless Controller (UWC) or Wireless LAN Controller (WLC) controls all access points at a location and helps them function as a unit rather than a collection of separate access points. The UWC sets the various channels of the access points, the power levels, and the roaming characteristics. Ensure that your wireless is centrally managed for all units.

Channel Selection - Each access point should be assigned to a different non-DFS channel (36, 40, 44, 48, 149, 153, 157, 161, and 165). If there are more than 9 access points at your location, then space the access point channel reuse as far away from each other as possible. Use a heat map to ensure that you avoid busy channels from nearby businesses or homes.

MU-MIMO - MU-MIMO adds a multi-user capability, providing this functionality to multiple client devices at the same time. If these are available options on the wireless, please enable this capability.

Bit Rate - Disable legacy bit rates that allow devices to connect with 802.11b. Set your minimum bit rate at 12 Mbit/s to ensure devices are not connecting at lower speeds.

Disable Band Steering - Disable band steering on your access point and assign the device SSID to the 5 GHz channel only.

Outdoor access points are required for Outdoor Mobile Devices - Install outdoor access points on an exterior wall 10'-15' above the ground with direct line of sight to the Aloha Cloud device.

Access Points Density - Site design guidelines typically place an access point for every 1600 square feet (40' x 40'), with up to 30 connected clients per access point. If there are more clients connecting or a greater distance span, connectivity will be poor.

Avoid Metal - Do not install the access point on a metal menu board, near a metal door or adjacent to metal pipes. The metal reflects the signal causing timing issues with the wireless communications and will create connection instability.

Channel Width - Enable 20 MHz channel width to give each device the ability to connect at required speeds while retaining a strong signal strength.

SSID Use - Do not use more than three SSIDs on an access point within a single band (2.4 GHz or 5 GHz). Tag every SSID to a separate VLAN.

DHCP Lease Time - Use longer lease times for your business devices that use DHCP. Assign equipment that does not change an infinite or weeklong lease, to remove the risk of losing the IP address. This minimizes traffic, overhead, and potential for issues with leases.

uAPSD (unscheduled Automatic Power Save Delivery) - Enable uAPSD, as it can greatly reduce your wireless battery consumption by up to 75%.

Radio Power - Reduce the radio power of the access points to reduce the amount of signal overlap with adjacent access points. This allows for smoother handoff for the wireless devices between access points while keeping bandwidth maximized. Ensure there is only a 10-15% overlap in signal, so the access points can hand off to each other for device transfer.

Fast Roaming - Enable 802.11r, 802.11k, and 802.11v. Fast roaming utilizes 801.11r to facilitate Fast Transition (FT) roaming. There is a significant difference in roaming transition speeds between enabled devices.

FlexConnect (Cisco/Meraki Products) - FlexConnect allows for centralized management of access points, while data traffic switching and client authentication occurs locally. This speeds connection times and assists in quicker transitions between access points.

Disable Multicast Filtering - Aloha uses multicast for communicating with devices throughout its ecosystem. Often wireless systems have 'Multicast Filtering' enabled by default. Disable 'Multicast Filtering' to ensure the traffic on which Aloha relies is available to the wireless part of the network.

Disable IGMP Snooping (Cisco/Meraki Products) - IGMP Snooping does not allow printer broadcasting to talk with the wireless devices. This option is on by default in Meraki/Cisco equipment.

Disable Broadcast Suppression Limiting – Automated printer discovery requires broadcast traffic.

Update your access point firmware - Most access point devices improve over time, as updates and fixes are applied to the devices. To ensure that you are getting the full benefit of your access point devices, while minimizing potential issues that may exist in older firmware, you should keep aware of firmware updates and apply those with benefits to your network.

Verify your coverage with a Heat Map - Once you complete the setup of your wireless network, use a program like Netspot to create a heat map. At a minimum, use an iPad or other mobile device to test the network at various locations. Ensure that every area where you may use a mobile device has a strong signal and good throughput to the network. A simple test is to run Speedtest.net from each table and server area from your wireless device.

Internet requirements

Item	Required
Connection type	Fiber, business class cable, or DSL (in that order of preference)
Speed	Minimum 25 Mbps download / 5 Mbps upload
Backup Connection (Recommended)	Fiber, cable, DSL, Starlink or Cellular

Fiber, cable, or DSL Internet access

Fiber, cable, and DSL deliver Internet through wired networks and provide the high reliability and low latency required for our software solution. These are listed in order of preference, with fiber being the most reliable and fastest type connection. Cable Internet is second best with DSL being a distance 3rd. Ideally, choose Fiber or Cable if those are available in your area. Cable internet should be ordered as business class internet. While this may be slightly more expensive than residential internet, the uptime and service guarantees, as well as improved support make the choice a wise one. Check the installation lead times for your Internet service. Service may take weeks for installation. Order service well in advance of the Aloha Cloud installation. Ensure the Internet service terminates near the firewall for the location. Satellite, Wi-Fi or Cellular (4G/5G) connections are not supported for primary Internet access.

Download and upload speeds

The download and upload speeds required of Aloha Cloud are on the minimal side of today's Internet package options at 25 Mbps download and 5 Mbps upload. If the Internet has other Internet usage, such as video streaming to TVs on location, table-based ordering, or guest Wi-Fi, the Internet speed should be increased appropriately. A typical standard speed today is 200 Mbps download and 20 Mbps upload.

Backup connection (recommended but not required)

Consider a backup or secondary Internet connection for your business and a firewall that can handle dual WAN (Wide Area Network) connections. This backup connection can be a lower bandwidth connection from a different provider. For example, you may have cable Internet as primary and DSL as backup internet. Even though cellular Internet does not meet our standard for your primary Internet access, for short periods of usage during a primary Internet outage it can be a great backup Internet for a business. If you choose not to have a backup connection, credit card transactions will not be authorized until the Internet is restored. You can establish limits for these offline transactions within

your Aloha Cloud parameters. If you want a Cellular 4G backup solution, check with your NCR account representative for NSS network solutions.

Summary

Internet access and network design is crucial to the success of your business. Using this and other business network best practices, you can minimize connectivity issues and ensure a solid foundation for your infrastructure.

Site readiness acknowledgment

Electrical

- ☐ All electrical circuits are dedicated.
- ☐ All electrical circuits have an isolated ground.
- ☐ All outlets have been tested to provide 120 volts of power +- 5v (115-125v).
- ☐ There is a duplex outlet (2 plugs) at each terminal or kitchen station.
- ☐ There is a simplex outlet (1 plug) or duplex outlet (2 plugs) at each prep printer station.
- ☐ There is a quad outlet and a duplex outlet (6 available sockets) at the file server location.

Network wiring

- ☐ There are two data RJ45 Ethernet jacks per terminal (unless more are specified by the Project Lead).
- ☐ There is one data jack per prep printer or kitchen display.
- ☐ All data lines are terminated, connected to a patch panel, and labeled.
- ☐ Holes have been drilled to allow ease of access to all data and power connection points on the equipment. There are no obstructions by other furniture or devices. All mounting brackets will be professionally installed prior to the install.

Network equipment

- ☐ A business class firewall has been installed, configured, and tested.
- ☐ A switch has been installed for connecting access points and wired devices.
- ☐ If a managed switch was used, VLANs have been established separating the POS network from other business and guest networks.
- ☐ A unified wireless system has been installed to support wireless devices, if used.
- ☐ The POS network, including wireless is on a single VLAN and subnet.

Network wireless

☐ Wireless standard is AC (WiFi 5) or AX (WiFi 6).

☐ Business network is set to 5 GHz only.

☐ Channel Width is set to 20 MHz.

☐ Guests WiFi (if provided) is segmented from the business network and on 2.4 GHz.

☐ Mesh networking is not used. All access points are connected to the network by ethernet cable.

☐ The access points are Cloud Managed Unified Wireless

☐ A Heat Map has been done to ensure adequate coverage of service areas, including outdoor patios, drive-thru and other outdoor areas where wireless devices may be used. ☐

Internet

☐ Fiber, cable, or DSL high speed Internet (25 Mbps download / 5 Mbps upload minimum) is available.

☐ If your Internet access uses a static IP connection, please provide:

- IP address _____
- Subnet mask_____
- Gateway_____
- DNS_____

☐ Provide the SSID and password needed for the NCR wireless devices to connect to the network.

I certify that all above requirements have been met and to the best of my knowledge the site is ready to have the NCR provided and specified equipment installed. If my install needs to be rescheduled, I acknowledge and agree to provide full payment upon receiving the hardware and agree to pay any additional travel charges or rescheduling fees that are associated with having to return to complete the installation, if the installation cannot be completed due to improper site readiness. I further acknowledge and agree that I understand that the hardware support coverage date on my hardware commences on the date that the hardware is delivered to my requested location.

Signature:

_____

Name: _____ Title: _____

Company: _____ Date: _____

Aloha Cloud Point-of-Sale, Electrical, Network, and Internet Requirements

NCR Voyix welcomes your feedback on this document. Your comments can be of great value in helping us improve our information products. Please contact us using the following email address: Documentation.HSR@NCRVoyix.com