

User Guide

NCR CX5 All-in-One POS (7773)



BCC5-0000-5396
Issue W



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Preface

Audience

This book is written for hardware installer/service personnel, system integrators, and field engineers.

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Safety Requirements

The *NCR CX5 All-in-One POS (7773)* conforms to all applicable legal requirements. To view the compliance statements see the [NCR POS Terminals Safety and Regulatory Information](#) (B005-0000-1589).



Caution: The on/off switch is a logic switch only. The AC line voltage primaries are live at all times when the AC power cord is connected to the AC outlet. Therefore, **disconnect the AC power cord from the AC outlet and wait 30 seconds before opening the unit to install features or service this terminal.**

Lithium Battery Warning



Warning: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.



Attention: Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Battery Disposal (Switzerland)

Refer to Annex 4.10 of SR814.013 for battery disposal.

IT Power System

This product is suitable for connection to an IT power system with a phase-to-phase voltage not exceeding 240 V.

Peripheral Usage

This terminal should only be used with peripheral devices that are certified by the appropriate safety agency for the country of installation (UL, CSA, TUV, VDE) or those which are recommended by NCR Corporation.



Warning: DO NOT connect or disconnect the transaction printer while the terminal is connected to AC power. This can result in system or printer damage.



Warning: DO NOT connect or disconnect any serial peripherals while the terminal is connected to AC power. This can result in system or printer damage.

Grounding Instructions

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not modify the plug provided – if it will not fit the outlet, have the proper outlet installed by a qualified electrician. Improper connection of the equipment-grounding conductor can result in a risk of electric shock.

The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor.

If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if you are in doubt as to whether the product is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the product's plug. **Repair or replace damaged or worn cords immediately.**

Out of Box Failure (OBF)

If you experience an out of box failure (OBF) during installation or staging related to a missing, wrong or defective unit or item, simply provide NCR with a detailed description of the issue and the item will be replaced free of charge. For assistance with this process send an email to CustomerSat.Retail@ncr.com with the following details:

- NCR Sales Order # (Sales Order # are located on the box)
- Date of Product Installation
- Product Model #
- Unit Serial #
- NCR part # of defective/missing/wrong component
- Description of Failure (please be specific. For example: “display will not power on”)
- Customer/Requestor’s contact name, phone number and/or e-mail address
- Address to ship replacement part(s)

Transport the product in its original packaging to prevent impact damages.

If you do not have access to a computer, you may leave a voice message at: 1-800-528-8658 (USA), or (International) +1-770-623-7400. When leaving a message, please provide a phone number and/or an email address so NCR can contact you if additional details are needed.



Note: Used equipment that experiences a failure does not qualify as an OBF and should go through the NCR warranty process.

Warranty

Warranty terms vary by region and country.

All parts of this product that are subject to normal wear and tear are not included in the warranty. In general, damages due to the following are not covered by the warranty.

- Improper or insufficient maintenance
- Improper use or unauthorized modifications of the product.
- Inadequate location or surroundings. Site installation must conform to guidelines listed in the *NCR CX5 All-in-One POS (7773) Site Preparation Guide (BCC5-0000-5397)* and the *NCR Workstation and Peripheral AC Wiring Guide (BST0-2115-53)*.

For detailed warranty arrangements please consult your contract documents.

Returning Defective Hardware for Service

Use the following procedure to report/return defective hardware.

Call the *NCR Customer Care Center* at 1-800-262-7782 and have the following information available when you place the call.

- Class/Model number of the defective equipment
- Serial Number of the defective equipment
- Equipment location in the store
- Description of the problem, including any system error codes, error condition, or guidance to the area of failure.

The NCR Agent will provide you with a work order number, which serves as your Return Material Authorization (RMA). Please provide the RMA on the outside of the shipping box.



Note: A work order must be opened for each device that is shipped for repair.

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Revision Record

| Issue | Date | Remarks |
|-------|----------|---|
| A | Nov 2019 | First Issue |
| B | Dec 2019 | Added Administrator Login section |
| C | Apr 2020 | Updated touchscreen and cabinet cleaning procedures |
| D | Jul 2020 | Release 1.1 |
| E | Sep 2020 | Release 1.2 |
| F | Oct 2020 | Updated cabinet cleaning procedures |
| G | Jan 2021 | Release 1.3 |
| H | Mar 2021 | Updated Mounting Configurations section |
| I | Apr 2021 | Updated the following: <ul style="list-style-type: none"> • Caution statements in Preface and Connecting AC Power section • Illustration in Connecting AC Power section • Step 1 in Cleaning the Cabinet |
| J | Jun 2021 | Removed Appendix for Odometers |
| K | Jul 2021 | Updated I/O Board Connector Pinouts |
| L | Nov 2021 | Release 1.4 |
| M | Nov 2021 | Updated "Power Switch" section Added "Enabling ONESHOT" |
| N | Jan 2022 | Added: <ul style="list-style-type: none"> • Diagnostic LEDs • Warning for non-NCR Cash Drawers • F040 Stand, Integrated I/O Mount, without Power Supply • F041 Stand, Integrated I/O Mount, with Power Supply • F111 Serial Converter Cable • F471 OSI APA Graphical Display • F475 XL10 High Mount, Non-Touch • F476 XL10 High Mount, PCAP |
| O | Jan 2022 | Updated touchscreen cleaning procedures |
| P | Feb 2022 | Added F446 10" Touch LCD (TES) Base Display Updated Windex note in touchscreen cleaning procedures Added Configuring Gen3 Cash Drawer Switch Polarity |

| Issue | Date | Remarks |
|-------|----------|---|
| Q | Aug 2022 | Added note to DisplayPort section |
| R | Mar 2023 | Updated Configuring Cash Drawer Switch Polarity |
| S | Apr 2023 | Added Cleaning the MSR |
| T | May 2023 | Added Flip Functionality |
| U | May 2023 | Added NCRPSW/NCRPSL in Cash Drawer Switch Polarity section Added CX Display Touch Tool |
| V | Jul 2023 | Added Motherboard LAN Pinout and LAN Diagnostics LEDs |
| W | Dec 2023 | Added SLES 15 SP4 Software RAID Gold Master Image |

Chapter 1: Product Overview



CCP-76587

The NCR CX5 All-in-One POS (7773), powered by Intel's Apollo Lake System on Chip (SoC), delivers great performance and low energy cost. The CX5 is a fan-less system that features a sleek design and provides a wide range of configuration versatility. The ability to configure with an I/O board that accommodates environments with more USB devices or an I/O board that accommodates environments with more serial devices gives customers the flexibility that prevents additional expansion boards or hubs.

The CX5 offers two I/O configurations:

- USB Centric I/O
- Serial Centric I/O

| I/O Board Connectors | USB Centric I/O (Retail) | Serial Centric I/O (Hospitality) |
|----------------------|--------------------------|----------------------------------|
| USB-C to Head | 1 | 1 |
| 12V Powered USB | 3 | 1 |
| 24V Powered USB | 1 | 1 |
| Serial | 1 x RJ50 1 x DB9 | 4 x RJ12 2 x RJ45 |
| USB 3.0 (5V) | 2 | 2 |
| DisplayPort | 1 | 1 |

| I/O Board Connectors | USB Centric I/O (Retail) | Serial Centric I/O (Hospitality) |
|-----------------------|--------------------------|----------------------------------|
| Cash Drawer (12/24 V) | 1 (dual port) | 2 |
| LAN | 1 | 1 |

Both I/O boards are connected to the CX5 core motherboard through a single USB Type-C connector. In addition to the integration of the board in the base, each I/O can be configured for a wall mount solution, pole mount solution, or ordered in a remote chassis to permit placement under the counter.

Base Models

| Model | Description |
|----------------|--|
| 7773-1215-8801 | CX5, 15" 4:3 PCAP, 4GB DDR3L memory, No HDD, No Power Supply |
| 7773-1216-8801 | CX5, 15.6" PCAP, 4GB DDR3L memory, No HDD, No Power Supply |

Features

| Feature | | Description |
|-------------------------------|------|--|
| Display | F013 | 15" 4:3 oTP LCD, PCAP, eDP, 1024x768, AG/AS, 400nit, 7772 EDID |
| | F016 | 15.6" oTP LCD, PCAP, eDP, 1920x1080, AG/AS |
| Memory | F132 | 4GB, DDR3L (Core) |
| | F134 | 4GB, DDR3L (Add On) |
| Storage Media | F241 | SSD 120 GB, M.2 SATA |
| | F243 | SSD 240 GB, M.2 SATA |
| Port A (Right Side) Features | F140 | No Peripheral Filler Plate |
| | F141 | NCR Encrypted MSR |
| Port B (Left Side) Features | F150 | No Peripheral Filler Plate |
| | F151 | Biometrics |
| | F156 | Imager |
| Port C (Bottom/Chin) Features | F160 | No Peripheral Filler Plate |
| | F161 | 2-in-1 Sign-in (Dallas Key/Addimat) |
| | F166 | Imager |
| | F168 | Wireless Card and Antenna |
| | F169 | External Speaker Module |
| Port D Features | F450 | No Customer Display - Logo Badge |
| | F451 | APA (All Points Addressable) Graphical Display |
| | F452 | 7" Non-Touch LCD (XL7) Customer Display |
| | F453 | 7" Touch LCD (XL7) Customer Display |
| | F460 | 5MP Camera |
| | F461 | 2x20 Customer Display |
| | F462 | Double Byte Customer Display |
| | F471 | OSI APA (All Points Addressable) Graphical Display |

| Feature | Description | |
|--------------|-------------|---|
| Base Display | F446 | 10" Touch LCD (TES) Base Display |
| | F455 | 10" Non-Touch LCD (XL10) Base Display |
| | F456 | 10" Touch LCD (XL10) Base Display |
| | F457 | No Base Display Option |
| | F465 | 10" Non-Touch LCD (XL10) with Cube Imager |
| | F466 | 10" PCAP LCD (XL10) with Cube Imager |
| | F475 | 10" Non-Touch LCD (XL10) High Mount |
| | F476 | 10" PCAP LCD (XL10) High Mount |

| Feature | Description | |
|-----------------------|-------------|---|
| Base and Power Supply | F032 | Base for USB Centric I/O (Retail), Integrated Power Supply (15.6" 16:9 Display) |
| | F033 | Base for USB Centric I/O (Retail), Remote Power Supply (15.6" 16:9 Display) |
| | F034 | Base for Serial Centric I/O (Hospitality), Integrated Power Supply (15.6" 16:9 Display) |
| | F035 | Base for Serial Centric I/O (Hospitality), Remote Power Supply (15.6" 16:9 Display) |
| | F036 | Integrated USB Centric I/O (Retail) Expansion (15.6" 16:9 Display) |
| | F037 | Integrated Serial Centric I/O (Hospitality) Expansion (15.6" 16:9 Display) |
| | F038 | Remote USB Centric I/O (Retail) Chassis (15.6" 16:9 Display) |
| | F039 | Remote Serial Centric I/O (Hospitality) Chassis (15.6" 16:9 Display) |
| | F042 | Base for USB Centric I/O (Retail), Integrated Power Supply (15" 4:3 Display) |
| | F043 | Base for USB Centric I/O (Retail), Remote Power Supply (15" 4:3 Display) |
| | F044 | Base for Serial Centric I/O (Hospitality), Integrated Power Supply (15" 4:3 Display) |
| | F045 | Base for Serial Centric I/O (Hospitality), Remote Power Supply (15" 4:3 Display) |
| | F046 | Integrated USB Centric I/O (Retail) (15" 4:3 Display) |
| | F047 | Integrated Serial Centric I/O (Hospitality) (15" 4:3 Display) |
| | F048 | Remote USB Centric I/O (Retail) Chassis (15" 4:3 Display) |
| | F049 | Remote Serial Centric I/O (Hospitality) Chassis (15" 4:3 Display) |

| Feature | | Description |
|------------|------|----------------------------|
| Power Cord | F100 | US Power Cord |
| | F101 | International Power Cord |
| | F102 | UK Power Cord |
| | F103 | Australia Power Cord |
| | F104 | China Power Cord |
| | F105 | SEV Power Cord |
| | F106 | India Power Cord |
| | F107 | Taiwan Power Cord |
| | F108 | Argentina Power Cord |
| | F109 | Power Cord 120V Twist Lock |
| | F119 | No Power Cord |

Optional Features

| Optional Feature | | Description |
|--|------|--|
| Optional Stand | F040 | Stand, CX5, Integrated I/O Mount, without Power Supply |
| | F041 | Stand, CX5, Integrated I/O Mount, with Power Supply |
| Ethernet Cable | F110 | 10/100/1000 Ethernet Cable |
| Serial Converter Cable | F111 | Serial Converter Cable |
| Remote Base Cable (for use with F038, F039, F048, or F049) | F112 | USBC Cable, Remote, Keyed, Black, 1m |
| | F113 | USBC Cable, Remote, Keyed, Black, 2.5m |
| | F115 | USBC Cable, Remote, Straight Offset, Black, 2.5m |
| TPM | F130 | Hardware TPM Security Module 2.0 |

USBC Cable Options

| Cable | Description | Configuration Notes |
|-----------------------------|--|---|
| 1432-C847-0025 7773-F115 | USBC Cable, Remote, Straight Offset, Black, 2.5m | Use when connecting CX on third-party bracket to remote I/O |
| 1432-C851-0003 | USBC Cable, PSU Adapter for CX | Use with RJ45 Ethernet Plug (1432-C852-0003) |
| 1432-C878-0013 | USBC Cable - XL7W/XL10W pole mount connected to CX5/CX7 stand model (1.3m) | Use when connecting XL7W/XL10W pole mounted to CX on table top stand |
| 1432-C880-0010 7773-F112 | USBC Cable, Remote, Keyed, Black, 1m | Use when connecting CX head to remote I/O |
| 1432-C880-0025 7773-F113 | USBC Cable, Remote, Keyed, Black, 2.5m | Use when connecting CX head to remote I/O |
| 1432-C883-0013 | XL7W/XL10W USBC Cable for CX5/CX7 remote or integrated I/O (1.3m) | Use when connecting XL7W/XL10W pole mounted to CX with remote I/O or integrated I/O |
| 1432-C883-0025 | XL7W/XL10W USBC Cable for CX5/CX7 remote or integrated I/O (2.5m) | Use when connecting XL7W/XL10W pole mounted to CX with remote I/O or integrated I/O |

Operating Systems

The OS image and base platform drivers will be pre-loaded on the solid state drive prior to shipment. The POS must be configured with a solid state drive.

| Product ID | Product ID Description | Configuration Notes |
|------------|--|------------------------------|
| 7773-F700 | No Operating System | Approval required |
| 7773-F719 | Windows 10 IoT Enterprise 2019 LTSC Value 64 bit (UEFI) Embedded Operating System | Pre-installed in the factory |
| 7773-F740 | Orderman Windows 10 IoT Enterprise 2019 LTSC Value 64 bit (UEFI) Embedded Operating System | Pre-installed in the factory |
| 7773-F750 | Android Operating System | Pre-installed in the factory |
| 7773-F755 | NCRLinuxU 1.0 (Ubuntu 20.04.02 LTS based) | Pre-installed in the factory |
| 7773-F780 | NCR Linux C Operating System | Pre-installed in the factory |
| 7773-F781 | NCR Linux C 3.0 (CentOS 7.9) | Pre-installed in the factory |
| 7773-F790 | SUSE Linux Enterprise Server (SLES) 15 64 bit Operating System | Pre-installed in the factory |

Base client and third-party software are also available on the public NCR Platform Software Website: http://www5.ncr.com/support/support_drivers_patches.asp?Class=External\display

Specifications

| Model Specs | Details |
|---|--|
| Chipset | Apollo Lake |
| Processor | J3455 |
| Clock Speed (base) | 1.5 GHz |
| Burst Frequency | Up to 2.3 GHz |
| Cores | 4 |
| Level 2 Cache | 2MB |
| Thermal Design Power | 10 Watts |
| AMT | No |
| Intel vPro | No |
| Image Recovery Button | Yes |
| Odometer Chip | Yes |
| RAID Support | No |
| TPM | Yes |
| Memory | |
| Memory Type | DDR3L |
| Form Factor | SODIMM |
| Memory Slots | 2 |
| Standard Memory | 4GB (1 x 4GB) |
| Maximum Memory | 8GB (2 x 4GB) |
| Storage | |
| SSD - Solid State Drive (M.2 SATA) | 120GB SSD (128GB) 240GB SSD (256GB) |

| Model Specs | Details |
|---|------------------------------|
| Integrated Touch Display | |
| <i>15.6" Projected Capacitive</i> | |
| 15.6" Projected Capacitive 1920 x 1080 10-point touch | Yes |
| Brightness | 400 nits |
| Screen Life | 50K Hours to half brightness |
| Anti-Glare | Yes |
| Integrated Speaker | Standard |
| <i>15" 4:3 Projected Capacitive</i> | |
| 15" 4:3 Projected Capacitive 1024 x 768 10-point touch | Yes |
| Brightness | 400 nits |
| Screen Life | 50K Hours to half brightness |
| Anti-Glare | Yes |
| Integrated Speaker | Standard |
| Peripherals | |
| 3-track Encrypted MSR | Option |
| Integrated Wireless 802.11 AC & Bluetooth | Option |
| Integrated Biometric Reader | Option |
| Integrated 2D Imager | Option |
| Integrated 2-in-1 Sign-in Device | Option |
| Integrated Camera | Option |
| Integrated External Speaker | Option |

| Model Specs | Details |
|---|---|
| Consumer Displays | |
| APA Graphical Display | Option |
| 2x20 Customer Display | Option |
| Double Byte Customer Display | Option |
| 7" Color LCD (Touch or Non-touch) | Option |
| 10" Color LCD (Touch or Non-touch) | Option |
| 10" Color LCD with Cube Scanner (Touch or Non-touch) | Option |
| Dimensions/Weight | |
| 15.6" Projected Capacitive | |
| 15.6" CX5 terminal with base | <ul style="list-style-type: none"> • Dimensions (w x d x h) 14.95" x 7.81" x 12.08" (379.7 mm x 198.4 mm x 306.8 mm) • Weight 11.35 lbs (5.15 kg) |
| 15.6" CX5 terminal without base | <ul style="list-style-type: none"> • Dimensions (w x d x h) 14.95" x 1.26" x 9.32" (379.7 mm x 32.0 mm x 236.6 mm) • Weight 5.30 lbs (2.40 kg) |
| 15.6" CX5 terminal with integrated I/O | <ul style="list-style-type: none"> • Dimensions (w x d x h) 14.95" x 2.29" x 9.32" (379.7 mm x 58.1 mm x 236.6 mm) • Weight 6.30 lbs (2.86 kg) |

| Model Specs | Details |
|---|---|
| 15" 4:3 Projected Capacitive | |
| 15" 4:3 CX5 terminal with base | <ul style="list-style-type: none"> • Dimensions (w x d x h) 13.88" x 8.23" x 12.52" (352.5 mm x 209.0 mm x 318.0 mm) • Weight 12.00 lbs (5.44 kg) |
| 15" 4:3 CX5 terminal without base | <ul style="list-style-type: none"> • Dimensions (w x d x h) 13.88" x 1.34" x 10.76" (352.5 mm x 34.1 mm x 273.4 mm) • Weight 6.30 lbs (2.86 kg) |
| 15" 4:3 CX5 terminal with integrated I/O | <ul style="list-style-type: none"> • Dimensions (w x d x h) 13.88" x 2.37" x 10.76" (352.5 mm x 60.2 mm x 273.4 mm) • Weight 6.80 lbs (3.08 kg) |

Mounting Configurations

In addition to the integration of the board in the base, each I/O can be configured for a wall mount solution, pole mount solution, or ordered in a remote chassis to permit placement under the counter.

- [Table Top Stand](#) below
- [Remote I/O Chassis – Pole Mount](#) on page 15
- [Integrated I/O Chassis – Stand/Wall/Pole Mount](#) on page 16

Table Top Stand

Table Top Stand with Remote Power Supply

The Power Supply is not integrated in the Base.

For CX5 15.6" 16:9 Display

- with USB Centric I/O (Retail) (F033)
- with Serial Centric I/O (Hospitality) (F035)

For CX5 15" 4:3 Display

- with USB Centric I/O (Retail) (F043)
- with Serial Centric I/O (Hospitality) (F045)



Table Top Stand with Integrated Power Supply

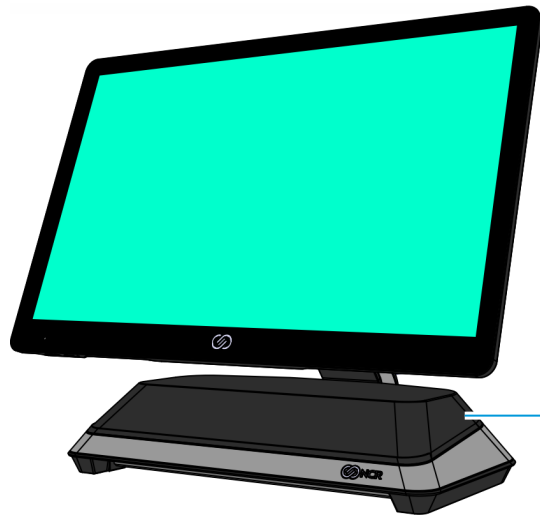
The Power Supply is integrated in the Base.

For CX5 15.6" 16:9 Display

- with USB Centric I/O (Retail) (F032)
- with Serial Centric I/O (Hospitality) (F034)

For CX5 15" 4:3 Display

- with USB Centric I/O (Retail) (F042)
- with Serial Centric I/O (Hospitality) (F044)

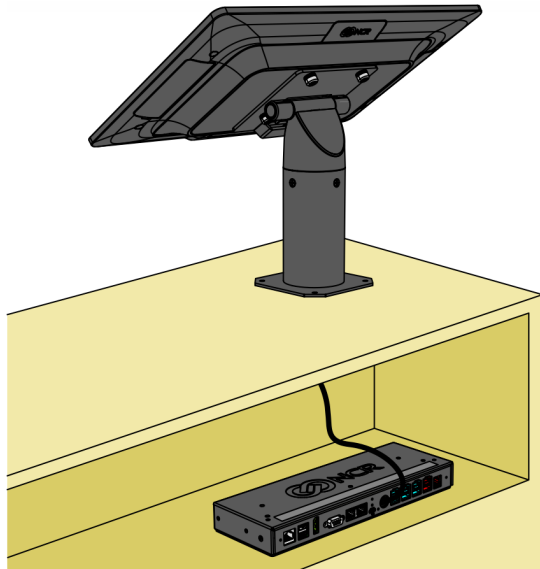


Power Supply is integrated in the Base

CCP-76586

Remote I/O Chassis – Pole Mount

The CX5, when configured with a Remote I/O, must be mounted on a Pole.



CCP-79967

Remote I/O Chassis Options

For CX5 15.6" 16:9 Display

- 7773-F038, 7772-K038 – Remote USB Centric I/O (Retail) Chassis
- 7773-F039, 7772-K039 – Remote Serial Centric I/O (Hospitality) Chassis

For CX5 15" 4:3 Display

- 7773-F048, 7772-K038 – Remote USB Centric I/O (Retail) Chassis
- 7773-F049, 7772-K039 – Remote Serial Centric I/O (Hospitality) Chassis

Remote I/O Chassis Cable Options

- 7773-F112 (1432-C880-0010) – USBC Cable, Remote, Keyed, Black, 1m
- 7773-F113 (1432-C880-0025) – USBC Cable, Remote, Keyed, Black, 2.5m

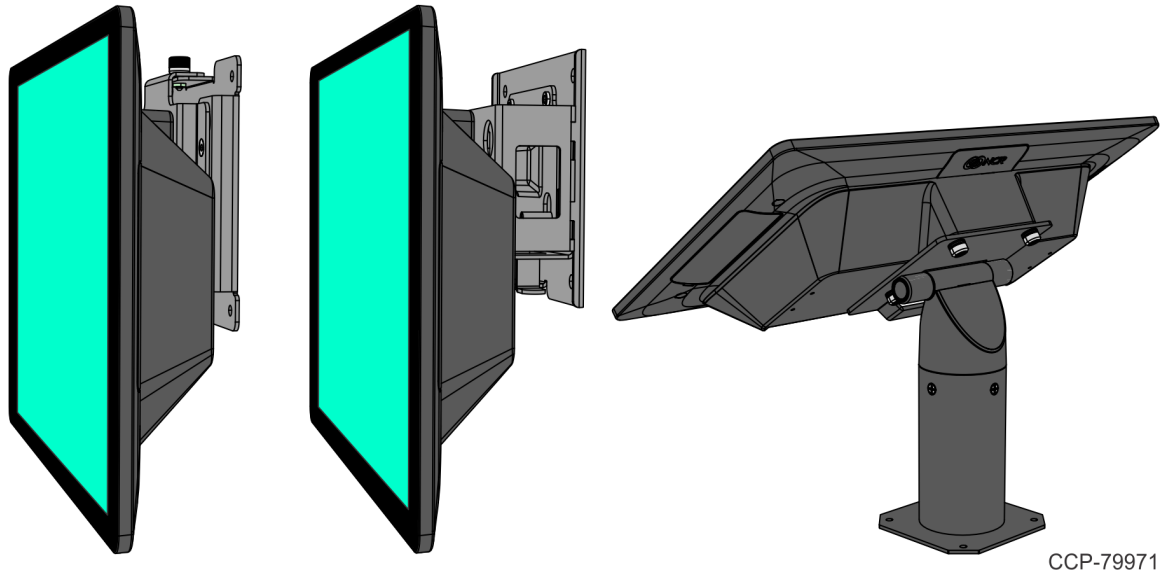
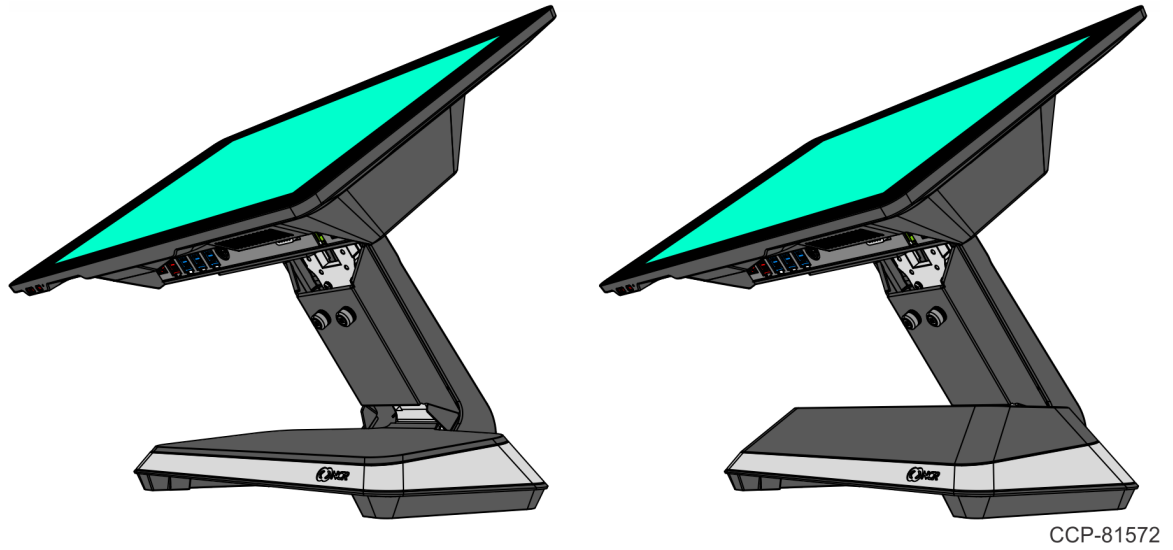
Pole Mount Options

The following kits provide an option to mount the CX5 with Remote I/O on a Pole.

- 7772-K400 – Pole Mount
- 7772-K503 – 14" Surface Mount Pole
- 7772-K504 – 14" Bolt-thru Mount Pole

Integrated I/O Chassis – Stand/Wall/Pole Mount

The CX5 with Integrated I/O can be mounted on a stand, on a wall, or on a Pole.



Integrated I/O Chassis Options

For CX5 15.6" 16:9 Display

- 7773-F036 – Integrated USB Centric I/O (Retail)
- 7773-F037 – Integrated Serial Centric I/O (Hospitality)

For CX5 15" 4:3 Display

- 7773-F046 – Integrated USB Centric I/O (Retail)
- 7773-F047 – Integrated Serial Centric I/O (Hospitality)



Note: Kits are not available to convert units to Integrated I/O.

Mounting Options

The following features/kits provide an option to mount the CX5 with Integrated I/O on a stand, on a wall or on a Pole.

Table Top Stand

- 7773-F040 – Stand, CX5, Integrated I/O Mount, without Power Supply
- 7773-F041 – Stand, CX5, Integrated I/O Mount, with Power Supply

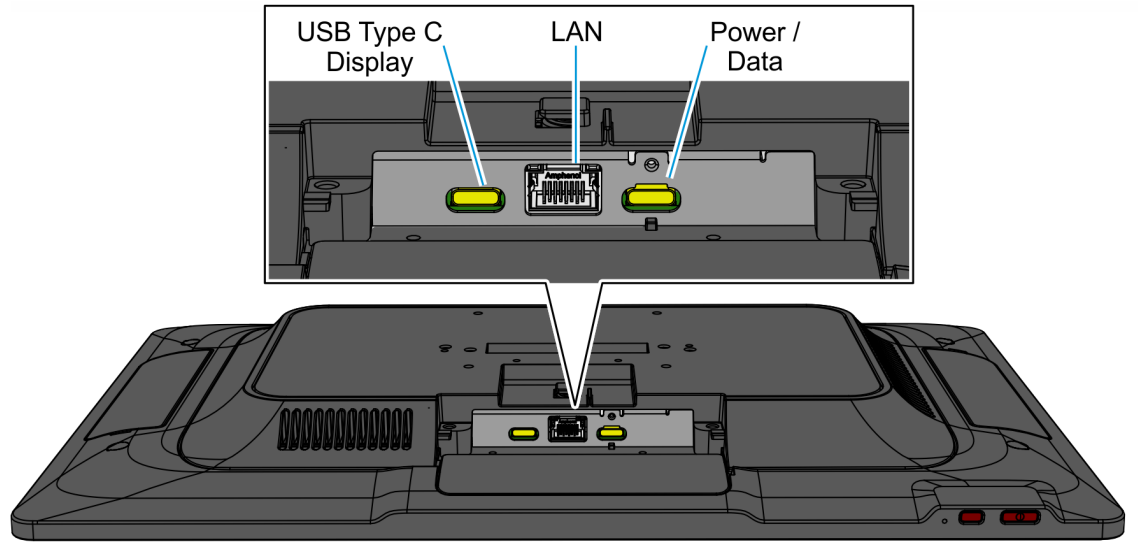
Wall Mount

- 7772-K320 – Flush Wall Mount Bracket, Integrated I/O
- 7772-K325 – Wall Mount Bracket with Power Supply enclosure, Integrated I/O

Pole Mount

- 7772-K400 – Pole Mount
- 7772-K503 – 14" Surface Mount Pole
- 7772-K504 – 14" Bolt-thru Mount Pole

CX Head Ports

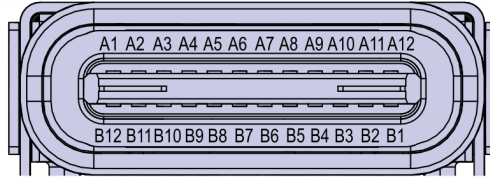


CCP-81523

CX Head (Motherboard) Connector Pinouts

USB-C (USB Type C Display)

The USB Type C connector (Molex 105450-0101-SD) serves as the connection between the Motherboard and the secondary display. The connector is rated at 30V withstand voltage and a current carrying capacity of up to 5A. The connector is compliant with the USB Type C Standard with Alt Mode for Display Port and reversible connection capability.



CCP-73981

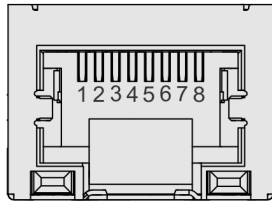
| Signal | Pin | Pin | Signal |
|--------------|-----|-----|--------------|
| GND | A1 | B12 | GND |
| USB 3.0 TX1+ | A2 | B11 | USB 3.0 RX1+ |
| USB 3.0 TX1- | A3 | B10 | USB 3.0 RX1- |
| +V (12V) | A4 | B9 | +V (12V) |
| CC1 | A5 | B8 | SBU2 |
| USB 2.0 D+ | A6 | B7 | USB 2.0 D- |
| USB 2.0 D- | A7 | B6 | USB 2.0 D+ |
| SBU1 | A8 | B5 | CC2 |
| +V (12V) | A9 | B4 | +V (12V) |
| Display Port | A10 | B3 | Display Port |
| Display Port | A11 | B2 | Display Port |
| GND | A12 | B1 | GND |

The Power Deliver (PD) Controller communicates with existing products which use TI TPS6598x devices. The port only supports standard 5V and non-PD (non-Power Delivery) standard voltage of 12V on +V pins to power NCR Customer Displays.

The port requires an MUX with Redriver to support cable lengths up to 4m.

LAN

The Motherboard provides 10/100/Gb LAN support using Intel I210.



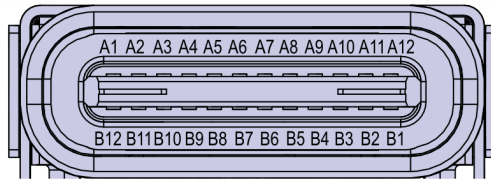
CCP-84007

| Signal Name | Pin | Pin | Signal Name |
|-------------|-----|-----|-------------|
| MDIP0 | 1 | 2 | MDIN0 |
| MDIP1 | 3 | 4 | MDIN1 |
| MDIP2 | 5 | 6 | MDIN2 |
| MDIP3 | 7 | 8 | MDIN3 |

The LAN connector features an Activity, Link, and Speed indicator LED. For more information, refer to [LAN Diagnostic LEDs](#) on page 77.

USB-C (Power/Data)

The USB Type C connector (Molex 105450-0101-SD) serves as the primary connection between the Motherboard and the I/O Board. The connector is rated at 30V withstand voltage and a current carrying capacity of up to 5A. The port is a non-standard USB-C port and is only intended to connect the Motherboard to the I/O Board. The port provides 24V and up to 4A current directly to the Motherboard from the I/O Board without Power Delivery (PD) handshaking.



CCP-73981

| Signal | Pin | Pin | Signal |
|--------------|-----|-----|--------------|
| GND | A1 | B12 | GND |
| USB 3.0 TX1+ | A2 | B11 | USB 3.0 RX1+ |
| USB 3.0 TX1- | A3 | B10 | USB 3.0 RX1- |
| +V (24V) | A4 | B9 | +V (24V) |
| CC1 (GPIO1) | A5 | B8 | SBU2 |
| USB 2.0 A D+ | A6 | B7 | USB 2.0 B D- |
| USB 2.0 A D- | A7 | B6 | USB 2.0 B D+ |
| SBU1 | A8 | B5 | CC2 (GPIO2) |
| +V (24V) | A9 | B4 | +V (24V) |
| Display Port | A10 | B3 | Display Port |
| Display Port | A11 | B2 | Display Port |
| GND | A12 | B1 | GND |

Since reversibility is not required, the CC1 and CC2 signals will be re-purposed for the following functions:

| Signal | Pin | Function |
|-------------|-----|-------------------------------|
| CC1 (GPIO1) | A5 | Power Status from Motherboard |
| CC2 (GPIO2) | B5 | Display Port Hot Plug Detect |

The port does not require an MUX, but requires independent Redrivers on the USB 3.0 and DP signals to support long cable lengths.

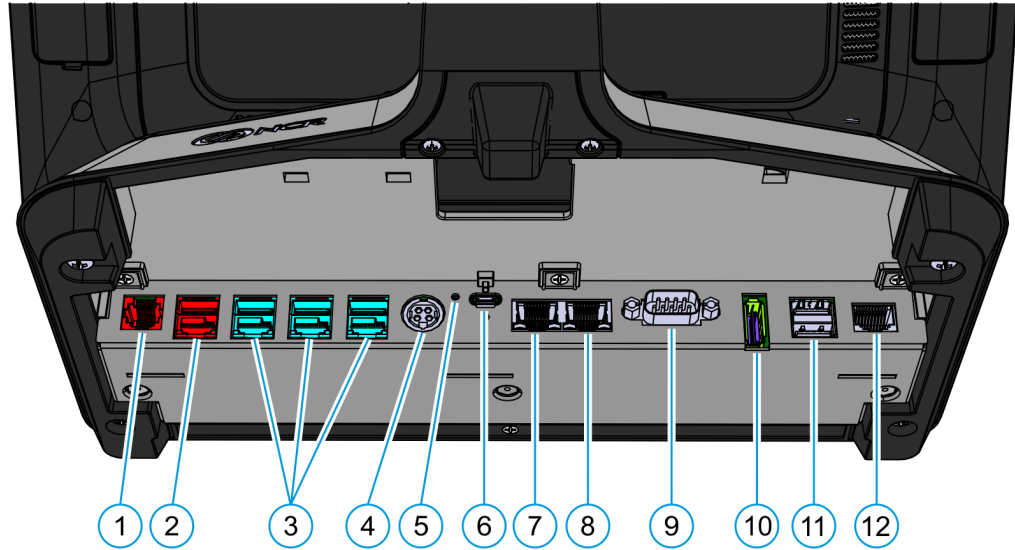
I/O Ports

- **USB Centric I/O (Retail)**
 - [Base](#) on the facing page
 - [Integrated I/O](#) on page 24
 - [Remote I/O Chassis](#) on page 25
- **Serial Centric I/O (Hospitality)**
 - [Base](#) on page 26
 - [Integrated I/O](#) on page 28
 - [Remote I/O Chassis](#) on page 30

USB Centric I/O (Retail)

Base

The following are the default I/O ports for the NCR CX5 All-in-One POS (7773) with a USB Centric I/O (Retail) Base.

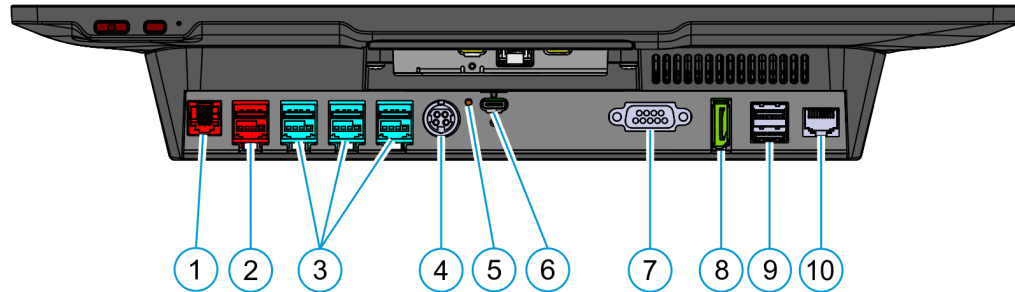


CCP-76592

| Callout | Port Name |
|---------|--|
| 1 | Cash Drawer |
| 2 | USB 24V |
| 3 | USB 12V, Ports C to E |
| 4 | 24V Power In |
| 5 | Status LED |
| 6 | USB-C |
| 7 | LAN Out Note: Connect to the CX Head |
| 8 | LAN In Note: Connect to Ethernet Network |
| 9 | DB9 Serial (Standard UART) |
| 10 | DisplayPort |
| 11 | Dual USB 3.0 |
| 12 | RJ50 Serial (Enhanced UART) |

Integrated I/O

The following are the default I/O ports for the NCR CX5 All-in-One POS (7773) with Integrated USB Centric I/O (Retail).

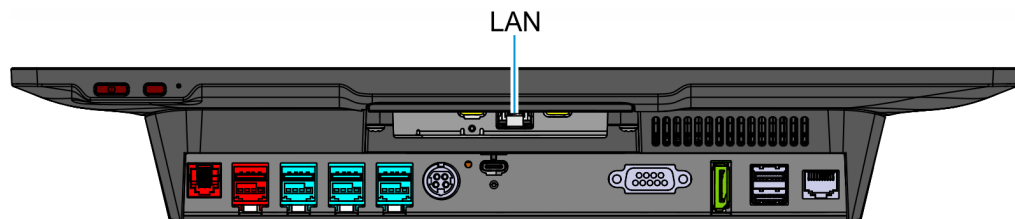


CCP-79083

| Callout | Port Name |
|---------|-----------------------------|
| 1 | Cash Drawer |
| 2 | USB 24V |
| 3 | USB 12V |
| 4 | 24V Power In |
| 5 | Status LED |
| 6 | USB-C |
| 7 | DB9 Serial (Standard UART) |
| 8 | DisplayPort |
| 9 | Dual USB 3.0 |
| 10 | RJ50 Serial (Enhanced UART) |



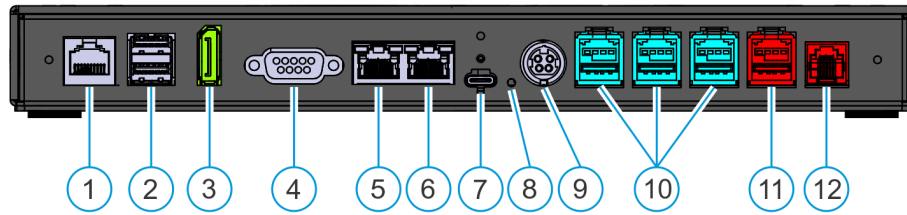
Note: The Integrated USB Centric I/O (Retail) does not include a LAN Port. A LAN Port is available on the Motherboard. To connect to a network, refer to [Connecting to a Network](#) on page 56.



CCP-84009

Remote I/O Chassis

The following are the default I/O ports for the NCR CX5 All-in-One POS (7773) Remote USB Centric I/O (Retail) Chassis.



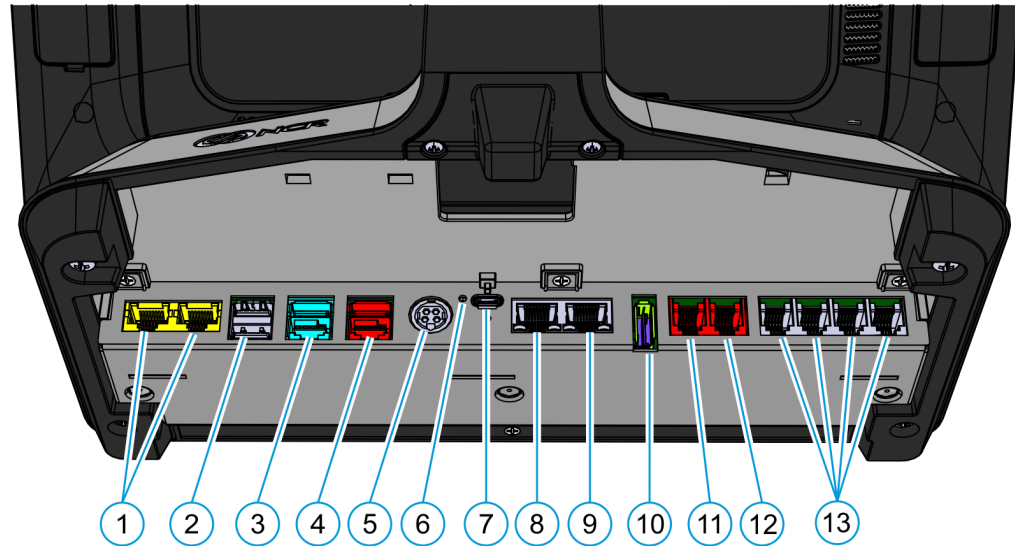
CCP-77891

| Callout | Port Name |
|---------|--|
| 1 | RJ50 Serial (Enhanced UART) |
| 2 | Dual USB 3.0 |
| 3 | DisplayPort |
| 4 | DB9 Serial (Standard UART) |
| 5 | LAN In Note: Connect to Ethernet Network |
| 6 | LAN Out Note: Connect to the CX Head |
| 7 | USB-C |
| 8 | LED |
| 9 | 24V Power In |
| 10 | USB 12V |
| 11 | USB 24V |
| 12 | Cash Drawer |

Serial Centric I/O (Hospitality)

Base

The following are the default I/O ports for the NCR CX5 All-in-One POS (7773) with a Serial Centric I/O (Hospitality) Base.



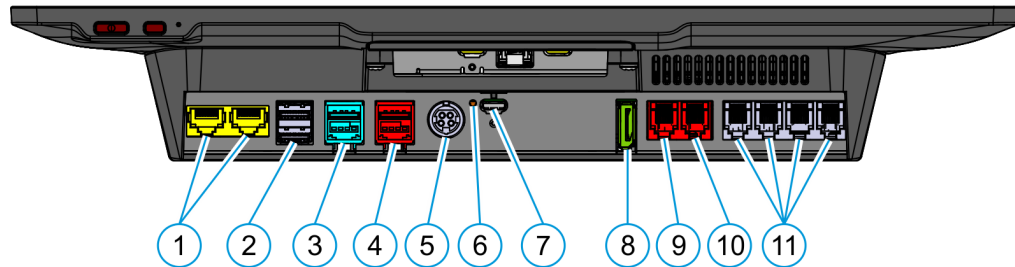
CCP-77864

| Callout | Port Name |
|---------|--|
| 1 | RJ45 Serial <ul style="list-style-type: none"> • COM5 (Enhanced UART) • COM6 (Standard UART) |
| 2 | Dual USB 3.0 |
| 3 | USB 12V |
| 4 | USB 24V |
| 5 | 24V Power In |
| 6 | Status LED |
| 7 | USB-C |
| 8 | LAN Out Note: Connect to the CX Head |
| 9 | LAN In Note: Connect to Ethernet Network |
| 10 | DisplayPort |
| 11 | Cash Drawer B |

| Callout | Port Name |
|---------|---|
| 12 | Cash Drawer |
| 13 | RJ12 Serial <ul style="list-style-type: none"><li data-bbox="586 342 954 373">• COM1 (Enhanced UART)<li data-bbox="586 384 954 415">• COM2 (Standard UART)<li data-bbox="586 426 954 457">• COM3 (Enhanced UART)<li data-bbox="586 468 954 499">• COM4 (Standard UART) |

Integrated I/O

The following are the default I/O ports for the NCR CX5 All-in-One POS (7773) with Integrated Serial Centric I/O (Hospitality).

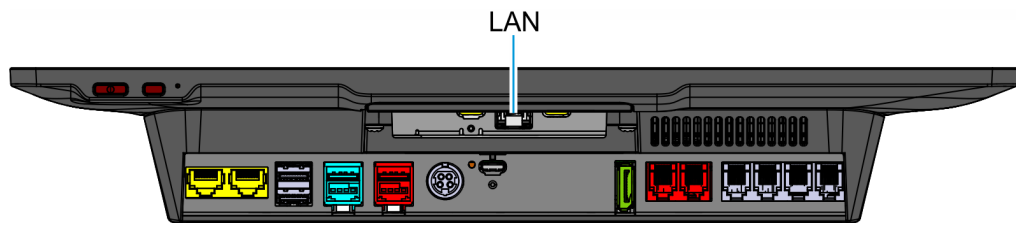


CCP-79084

| Callout | Port Name |
|---------|--|
| 1 | RJ45 Serial <ul style="list-style-type: none"> • COM5 (Enhanced UART) • COM6 (Standard UART) |
| 2 | Dual USB 3.0 |
| 3 | USB 12V |
| 4 | USB 24V |
| 5 | 24V Power In |
| 6 | Status LED |
| 7 | USB-C |
| 8 | DisplayPort |
| 9 | Cash Drawer B |
| 10 | Cash Drawer A |
| 11 | RJ12 Serial <ul style="list-style-type: none"> • COM1 (Enhanced UART) • COM2 (Standard UART) • COM3 (Enhanced UART) • COM4 (Standard UART) |



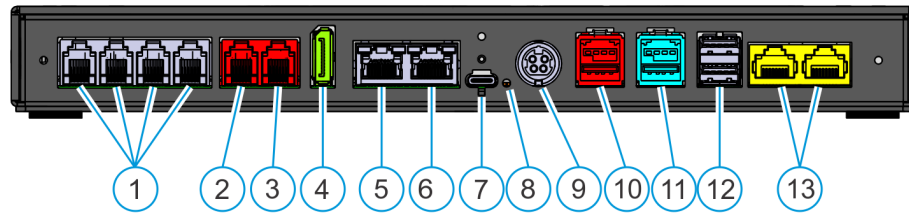
Note: The Integrated Serial Centric I/O (Hospitality) does not include a LAN Port. A LAN Port is available on the Motherboard. To connect to a network, refer to [Connecting to a Network](#) on page 56.



CCP-84010

Remote I/O Chassis

The following are the default I/O ports for the NCR CX5 All-in-One POS (7773) Remote Serial Centric I/O (Hospitality) Chassis.



CCP-77892

| Callout | Port Name |
|---------|--|
| 1 | RJ12 Serial <ul style="list-style-type: none"> • COM1 (Enhanced UART) • COM2 (Standard UART) • COM3 (Enhanced UART) • COM4 (Standard UART) |
| 2 | Cash Drawer A |
| 3 | Cash Drawer B |
| 4 | DisplayPort |
| 5 | LAN In Note: Connect to Ethernet Network |
| 6 | LAN Out Note: Connect to the CX Head |
| 7 | USB-C |
| 8 | LED |
| 9 | 24V Power In |
| 10 | USB 24V |
| 11 | USB 12V |
| 12 | Dual USB 3.0 |
| 13 | RJ45 Serial <ul style="list-style-type: none"> • COM5 (Enhanced UART) • COM6 (Standard UART) |

I/O Board Connector Pinouts

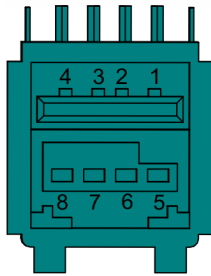
12V USB + Power

The I/O Board provides latching 12V Powered USB port (Foxconn P/N UB11123-GHT2-4F or NCR approved equivalent). The 12V Powered USB port is capable of supplying 12V at 2.0A max. The color of the connector is teal.

The 12V of each port is fused with a self-healing poly-fuse (Polytronics Everfuse P/N SMD2920P300TF/15 or NCR approved equivalent). An overcurrent signal is used to detect when this fuse is open. This signal is connected to a GPIO on the Super I/O.

Current limiting power switches are provided on the 5V VBUS pins with a limit current of 1A.

The USB Centric I/O Board provides three 12V Powered USB ports, while the Serial Centric I/O Board provides one 12V Powered USB port.



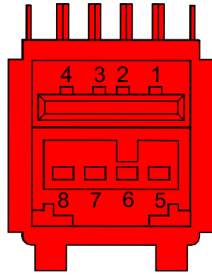
CCP-77887

| Signal Name | Pin | Pin | Signal Name |
|-------------|-----|-----|-------------|
| USB PWR | 1 | 5 | GND |
| USB D- | 2 | 6 | +12V |
| USB D+ | 3 | 7 | +12V |
| GND | 4 | 8 | GND |
| FRAME GND | 9 | 10 | FRAME GND |
| FRAME GND | 11 | 12 | FRAME GND |

24V USB + Power

The I/O Board provides one latching 24V Powered USB port (Foxconn P/N UB11123-GHR3-4F or NCR approved equivalent). The 24V Powered USB port is capable of supplying 24V at 2.3A continuous and 3.0A peak. The color of the connector is red.

The 24V is fused with a resettable fuse (Tyco RUEF250U or NCR approved equivalent). An overcurrent signal is used to detect when this fuse is open. This signal is connected to a GPIO on the Super I/O. A separate return line, 24V_RET, is used instead of ground to provide noise isolation.



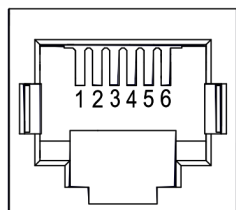
CCP-77888

| Signal Name | Pin | Pin | Signal Name |
|-------------|-----|-----|-------------|
| USB PWR | 1 | 5 | 24V_RET |
| USB D- | 2 | 6 | +24V |
| USB D+ | 3 | 7 | +24V |
| GND | 4 | 8 | 24V_RET |
| FRAME GND | 9 | 10 | FRAME GND |
| FRAME GND | 11 | 12 | FRAME GND |

Cash Drawer

Cash Drawer Connector for USB Centric I/O

The USB Centric I/O Board provides a single 6-position RJ12 connector (Molex 44248-0065 or NCR approved equivalent).

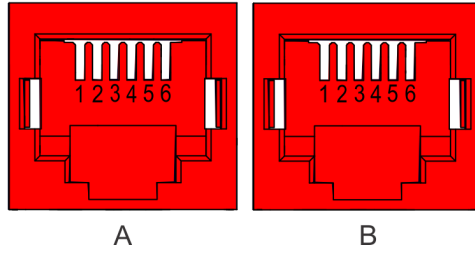


CCP-77004

| Pin | Signal Name |
|-----|-------------|
| 1 | Frame Gnd |
| 2 | Solenoid A |
| 3 | Drawer A/B |
| 4 | +24V/12V |
| 5 | Solenoid B |
| 6 | Logic Gnd |

Cash Drawer Connector for Serial Centric I/O

The Serial Centric I/O Board provides a dual package RJ12 connector. The color of the connector is red.

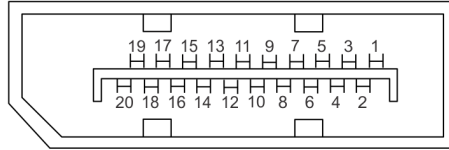


CCP-77004

| Pin | Signal Name |
|-----|-------------|
| 1 | Frame Gnd |
| 2 | Solenoid A |
| 3 | Drawer A/B |
| 4 | +24V/12V |
| 5 | NC |
| 6 | Logic Gnd |

DisplayPort

The I/O Board provides a 2-lane DisplayPort. Lanes 2 and 3 of the DisplayPort are not connected internally.



CCP-76975

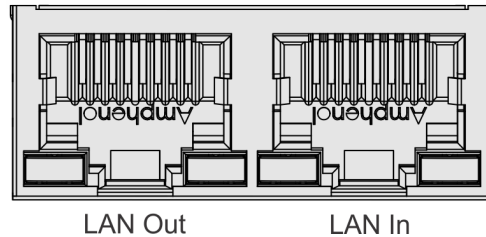
| Pin | Signal Name |
|-----|-----------------|
| 1 | ML_Lane0 (p) |
| 2 | GND |
| 3 | ML_Lane0 (n) |
| 4 | ML_Lane1 (p) |
| 5 | GND |
| 6 | ML_Lane1 (n) |
| 7 | ML_Lane2 (p) |
| 8 | GND |
| 9 | ML_Lane2 (n) |
| 10 | ML_Lane3 (p) |
| 11 | GND |
| 12 | ML_Lane3 (n) |
| 13 | CONFIG1 |
| 14 | CONFIG2 |
| 15 | AUX CH (p) |
| 16 | GND |
| 17 | AUX CH (n) |
| 18 | Hot Plug Detect |
| 19 | Return |
| 20 | DP_PWR |



Note: DisplayPort does not support dual-mode DisplayPort (DP++). Use the Active Adapter DisplayPort /M to HDMI /F (NCR part number 497-0530701) if driving an HDMI display.

LAN

Both USB Centric and Serial Centric I/O Boards provide Gigabit Ethernet support on an RJ45 connector using a passthrough connection to the motherboard. The connector does not feature an LED indicator.



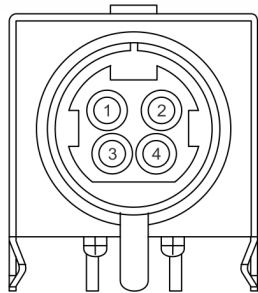
CCP-77853



Note: The Integrated I/O does not have LAN Out and LAN In Ports.

Power In

Both USB Centric and Serial Centric I/O Boards accept +24V DC voltage input from an external power supply. The Power In connector is a 4-pin DIN - CUI PD-40S or equivalent.

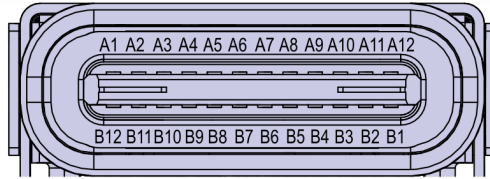


CCP-76976

| Pin | Signal Name |
|-----|-------------|
| 1 | GND |
| 2 | 24V |
| 3 | GND |
| 4 | 24V |

USB-C

The I/O Board is connected to the motherboard through a non-standard USB Type C connector. The I/O Board provides a +24V power to the motherboard through the VBUS lines of the USB-C connector.



CCP-73981

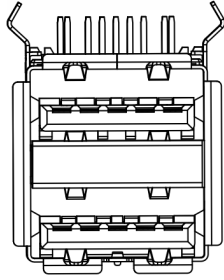
| Signal | Pin | Pin | Signal |
|--------------|-----|-----|--------------|
| GND | A1 | B12 | GND |
| USB 3.0 TX1+ | A2 | B11 | USB 3.0 RX1+ |
| USB 3.0 TX1- | A3 | B10 | USB 3.0 RX1- |
| +V (24V) | A4 | B9 | +V (24V) |
| CC1 (GPIO1) | A5 | B8 | SBU2 |
| USB 2.0 A D+ | A6 | B7 | USB 2.0 B D- |
| USB 2.0 A D- | A7 | B6 | USB 2.0 B D+ |
| SBU1 | A8 | B5 | CC2 (GPIO2) |
| +V (24V) | A9 | B4 | +V (24V) |
| Display Port | A10 | B3 | Display Port |
| Display Port | A11 | B2 | Display Port |
| GND | A12 | B1 | GND |

Since reversibility is not required, the CC1 and CC2 signals will be re-purposed for the following functions:

| Signal | Pin | Function |
|-------------|-----|-------------------------------|
| CC1 (GPIO1) | A5 | Power Status from Motherboard |
| CC2 (GPIO2) | B5 | Display Port Hot Plug Detect |

USB 3.0

The I/O Board provides a dual-stack USB 3.0 Type A connector. Each standard +5V USB port is capable of supplying 5V at 900mA which is controlled via load switch.



CCP-77884

Serial Ports

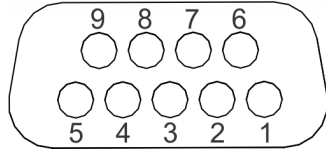
The USB Centric (Retail) and Serial Centric (Hospitality) I/O Boards provide different serial port connectors. The serial ports are connected through a USB to dual UART bridge IC (SiLabs CP2105).

The serial ports either have a Standard or Enhanced UART interface with the following features:

| | Standard UART Interface | Enhanced UART Interface |
|--|--------------------------|-----------------------------------|
| Data formats supported: Data Bits | 8 Data Bits | 5, 6, 7, and 8 Data Bits |
| Data formats supported: Stop Bits | 1 Stop Bit | 1, 1.5, and 2 Stop Bits |
| Parity | Even, Odd, No Parity | Odd, Even, Mark, Space, No Parity |
| Baud Rates | 2,400 bps to 921,600 bps | 300 bps to 2.0 Mbps |

DB-9 Serial (Standard UART)

The USB Centric I/O Board provides one full RS-232 serial port (Standard UART) through a DB-9 connector. The port has a shunt to select between +12V (default), +5V, or normal RI functionality. Maximum power capability is 1A from this port. The power output from this port is protected by a self-healing fuse.

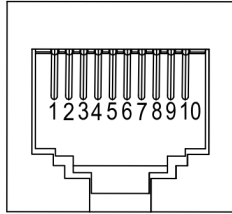


CCP-77885

| Pin | Signal Name |
|-----|-------------|
| 1 | DCD |
| 2 | RXD |
| 3 | TXD |
| 4 | DTR |
| 5 | GND |
| 6 | DSR |
| 7 | RTS |
| 8 | CTS |
| 9 | RI |

RJ50 Serial (Enhanced UART)

The USB Centric I/O Board provides one full RS-232 serial port (Enhanced UART) through an RJ50 connector. The port has a shunt to select between +12V (default), +5V, or normal RI functionality. Maximum power capability is 1A from this port. The power output from this port is protected by a self-healing fuse.



CCP-77849

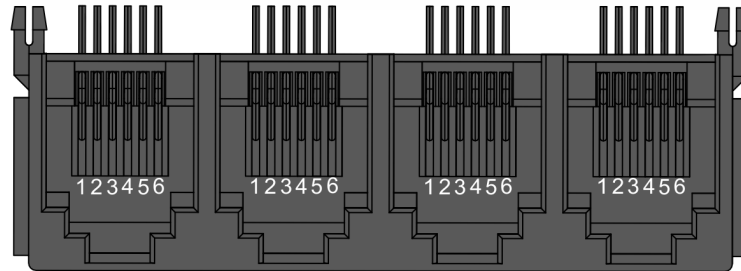
| Pin | Signal Name |
|-----|-------------|
| 1 | NC |
| 2 | DCD |
| 3 | DSR |
| 4 | RXD |
| 5 | RTS |
| 6 | TXD |
| 7 | CTS |
| 8 | DTR |
| 9 | GND |
| 10 | RI |

The RJ50 can be converted to DB9 using these Serial Adapter Cables:

- 1432-C304-0003 — RJ50 (10-pin) to DB9 (0.30m)
- 1432-C337-0007 — RJ50 (10-pin) to DB9 (0.65m)

RJ12 Serial (Two Enhanced UART and Two Standard UART)

The Serial Centric I/O Board provides a quad-package RJ12 serial port (two Enhanced UART and two Standard UART). The RJ12 port is an unshielded 6-pin. The color of the connector is black.

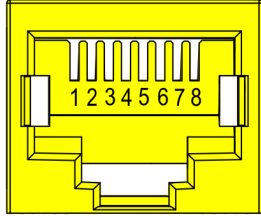


CCP-77886

| Pin | Signal Name |
|-----|-------------|
| 1 | RTS |
| 2 | GND |
| 3 | TX |
| 4 | RX |
| 5 | GND |
| 6 | CTS |

RJ45 Serial (One Enhanced UART and One Standard UART)

The Serial Centric I/O Board provides one dual package RJ45 serial port (one Enhanced UART and one Standard UART). The RJ45 port is an unshielded 8-pin. The color of the connector is yellow.



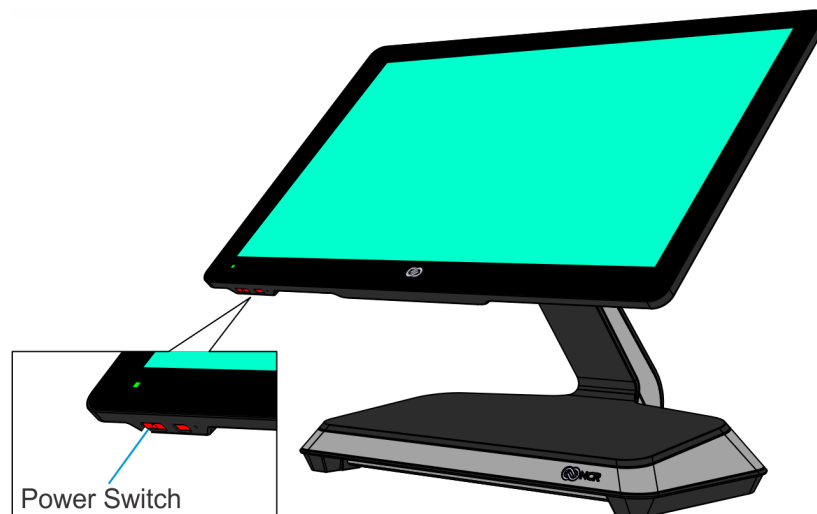
CCP-73983

| Pin | Signal Name |
|-----|-------------|
| 1 | DSR |
| 2 | DCD |
| 3 | DTR/5V |
| 4 | GND |
| 5 | RX |
| 6 | TX |
| 7 | CTS |
| 8 | RTS/12V |

Operator Controls

Power Switch

The Power Switch is located on the bottom of the display. This switch is a momentary contact, push-on-push-off switch.



CCP-76588

The behavior of the Power Switch is controlled by an Operating System setting. Options typically include:

- Do nothing
- Sleep
- Hibernate
- Shut down
- Turn off the Display

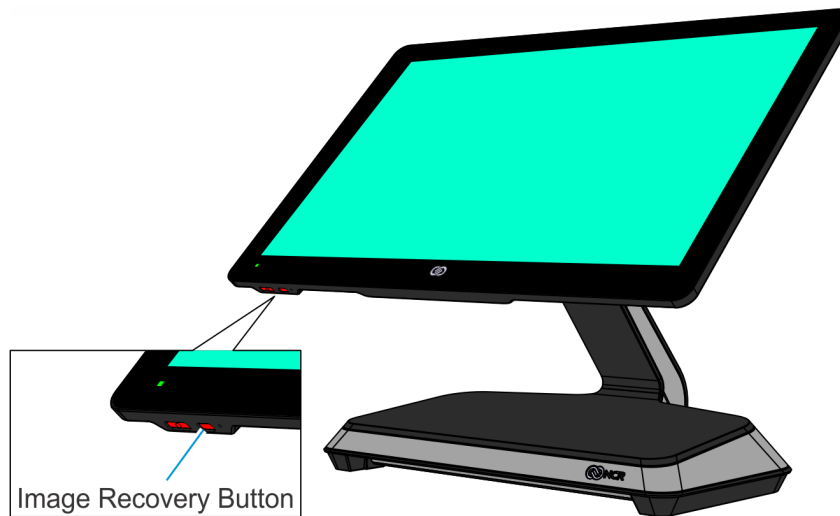
Do nothing is the recommended setting to avoid accidental power cycles. To ensure a stable system, power cycles should only be controlled through the customer POS application.



Warning: If the Power Switch is pressed for four seconds when powering down, the hardware level override of the processor forces an uncontrolled shutdown. This can corrupt the Operating System. The ONESHOT feature disables this hardware override. To turn on the ONESHOT feature, refer to the following procedures: [Enabling ONESHOT](#) on page 134.

Image Recovery Button

The Image Recovery Button is for the OS Image Recovery Tool option. The recessed button is located on the bottom of the display. The button is a momentary contact, push-on-push-off switch.



CCP-76590

Trusted Platform Module (TPM)

The CX5 supports fTPM (software) version 2.0. To confirm that TPM is enabled, follow these steps:

1. Go to **Windows Device Manager**.
2. Click the drop-down for **Security devices**. Trusted Platform Module 2.0 should display as shown below.



Imager

Programming the Imager

To program the imager to work on a Retail or Hospitality (Aloha) POS, refer to the following sections in the Imager Setup Sheets document (BCC5-0000-5470):

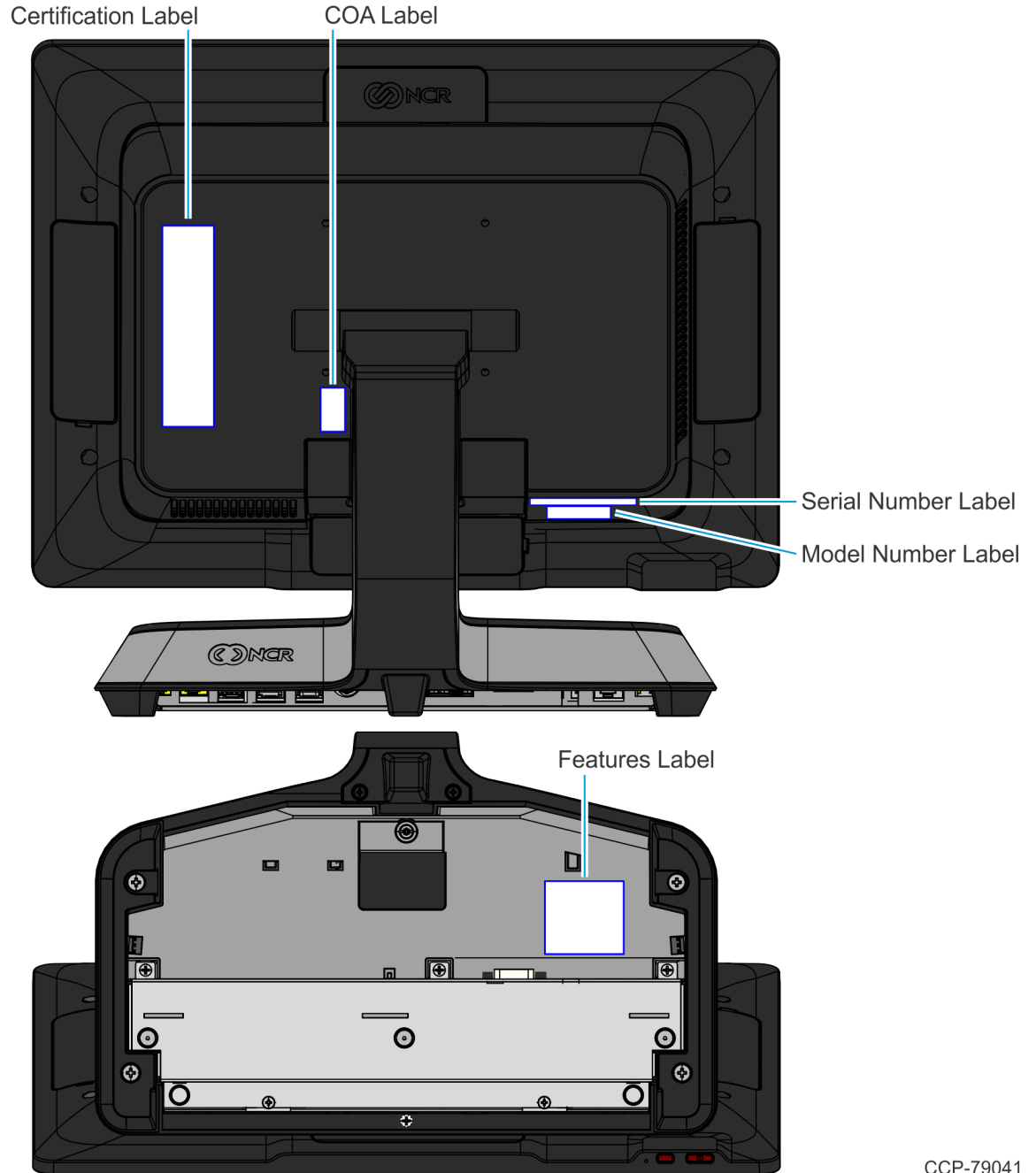
<https://onlinehelp.ncr.com/Retail/Scanners/ImagerSetup/HTML/FrontMatter-HTML/Home.htm>

- **Retail**
 - Honeywell N6600/N6700 Retail Quick Imager Setup
- **Hospitality (Aloha)**
 - Honeywell N6600 Aloha Programming Sheet

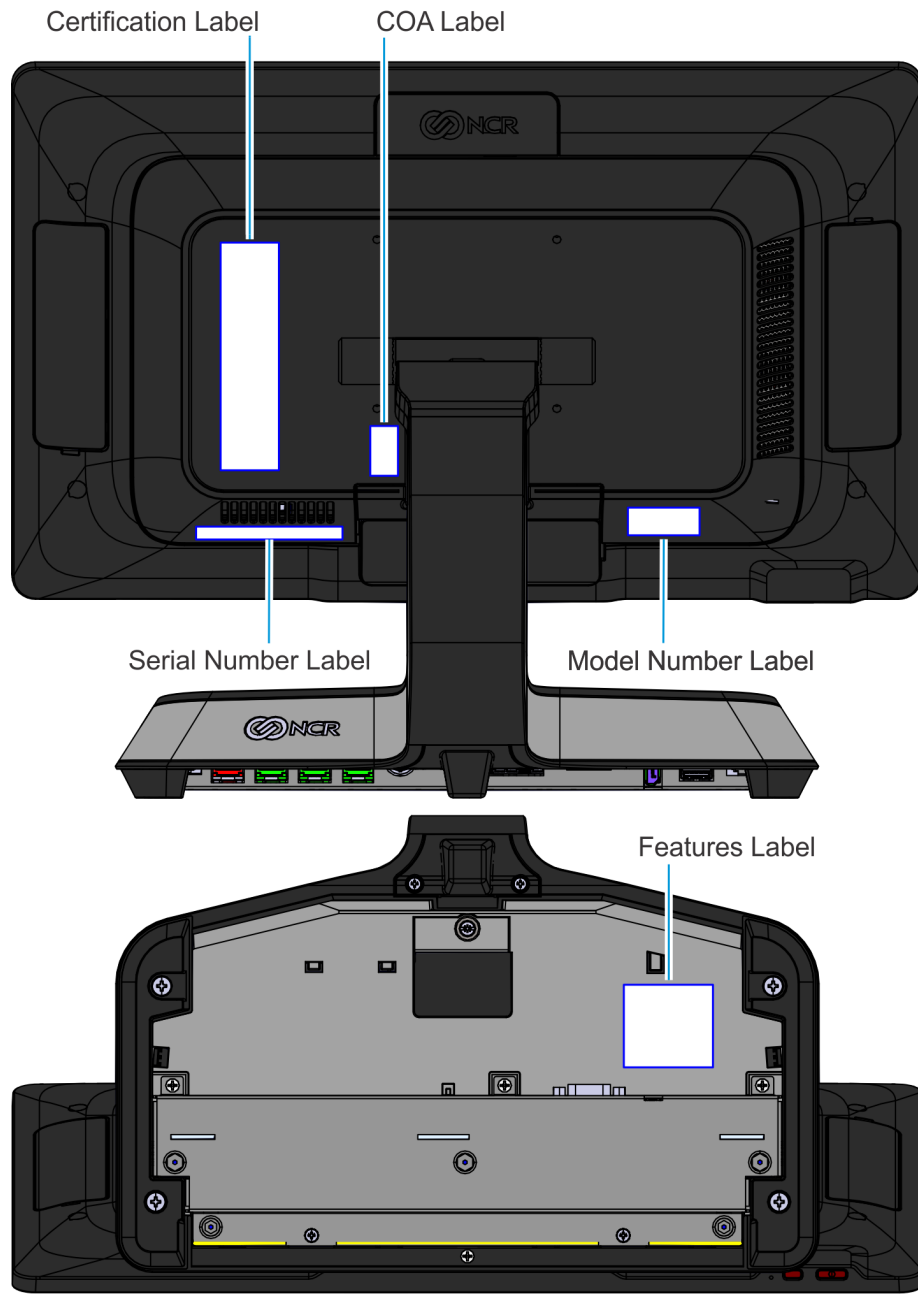
Label Locations

- [CX5 15" 4:3 Display with Base](#) below
- [CX5 15.6" 16:9 Display with Base](#) on the next page
- [CX5 15" 4:3 or 15.6" 16:9 Display with Integrated I/O](#) on page 49

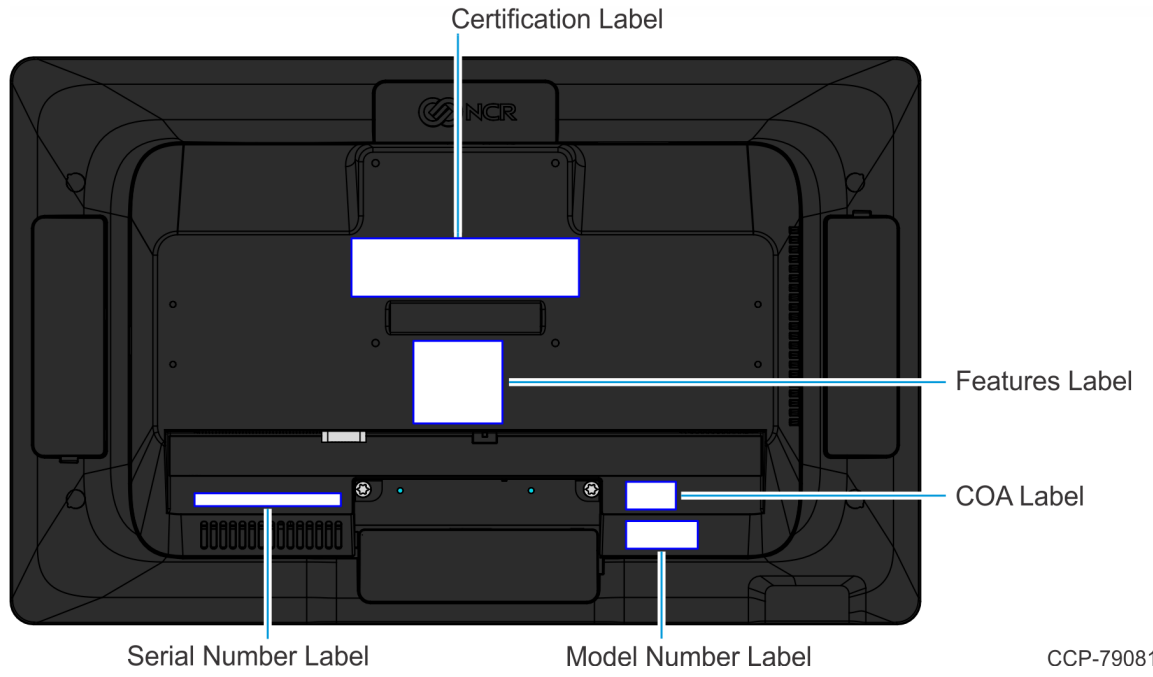
CX5 15" 4:3 Display with Base



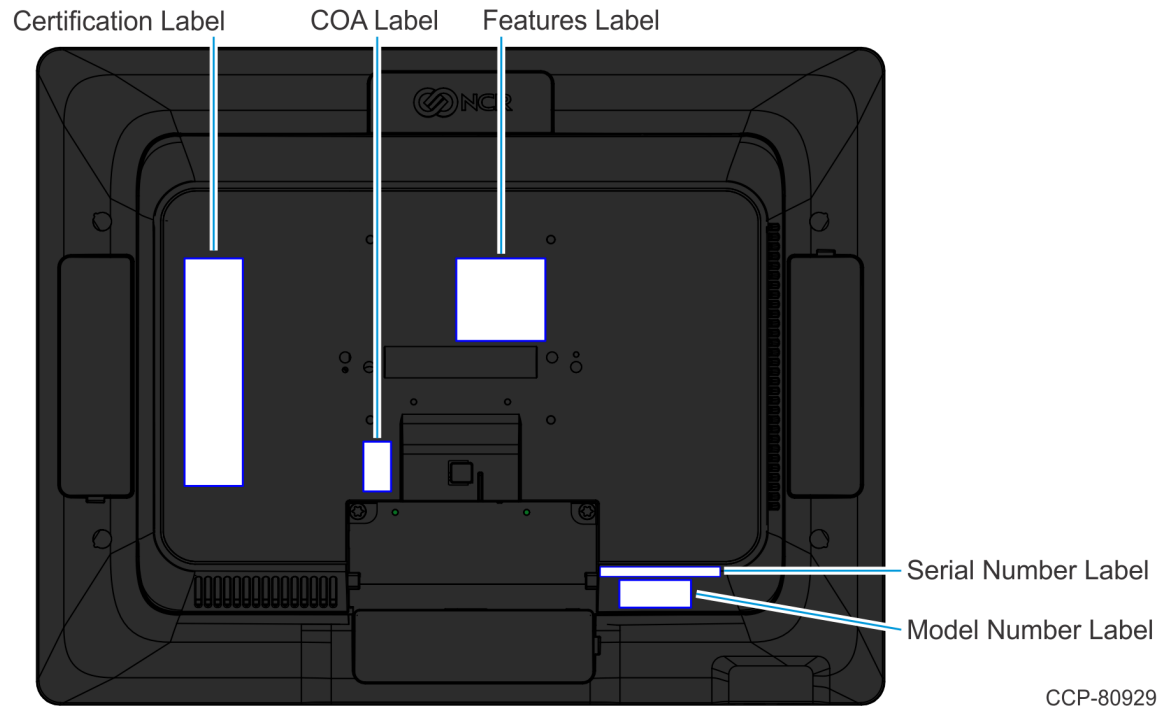
CX5 15.6" 16:9 Display with Base



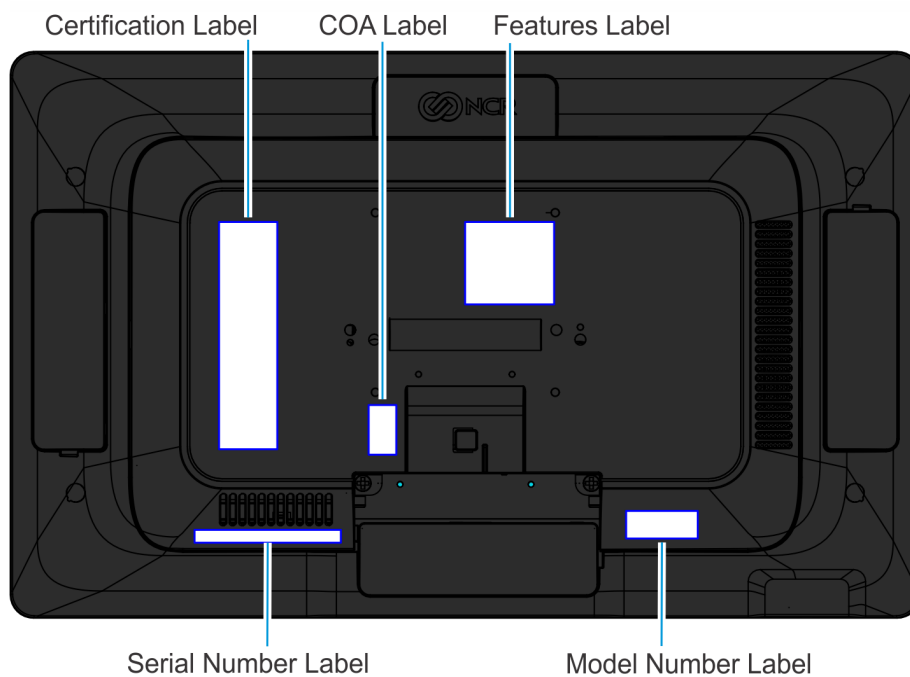
CX5 15" 4:3 or 15.6" 16:9 Display with Integrated I/O



CX5 15" 4:3 Display with Remote I/O



CX5 15.6" 16:9 Display with Remote I/O



Chapter 2: Hardware Installation

Installation Restrictions

- The NCR CX5 All-in-One POS (7773) conforms to all applicable legal requirements. To view the compliance statements see the [NCR RealPOS Terminals Safety and Regulatory Statements](#) (B005-0000-1589).
- Install the CX5 near an electrical outlet that is easily accessible. Use the power cord as a power disconnect device.
- Do not permit any object to rest on the power cord. Do not locate the CX5 where the power cord can be walked on.
- Use a grounding strap or touch a grounded metal object to discharge any static electricity from your body before servicing the CX5 terminal.



Warning: This unit contains hazardous voltages and should only be serviced by qualified service personnel.



Caution: Do not connect or disconnect the transaction printer while the terminal is on. This can result in system or printer damage.

Ergonomic Workplace

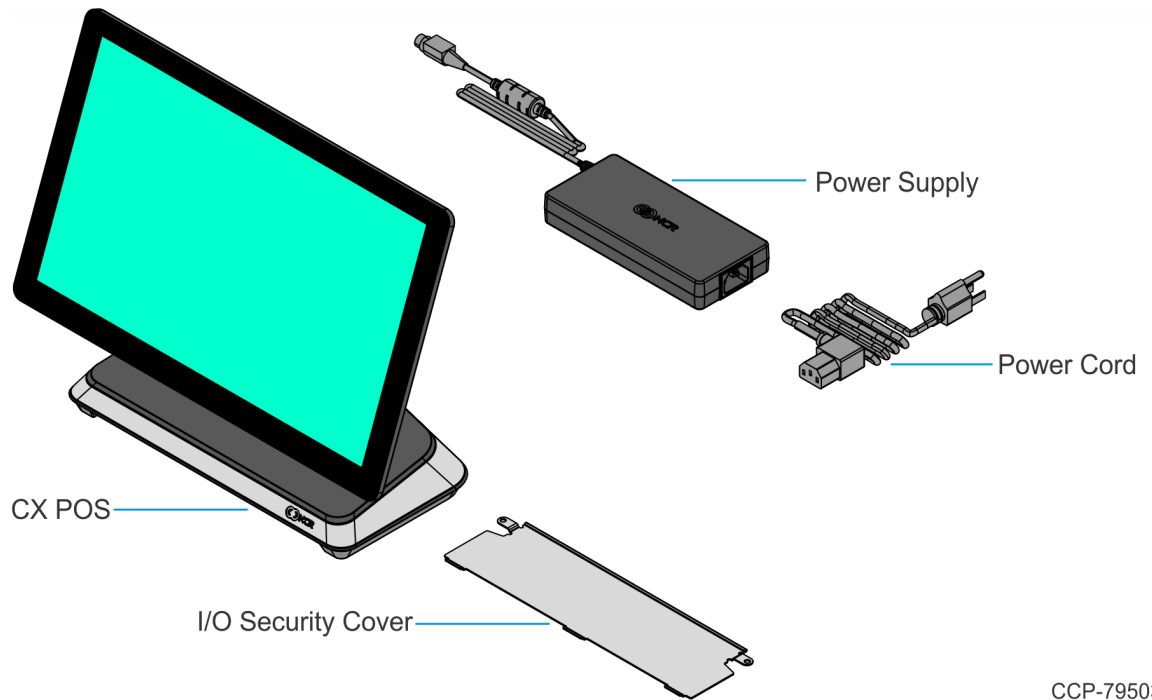
The NCR CX5 All-in-One POS (7773) has a high-brightness LCD with an anti-glare screen. For best results, please observe the following when considering the terminal workplace:

- Avoid direct-glaring and reflective-glaring light. Locate the terminal in a controlled luminance surrounding. When installed next to windows position the terminal so it does not reflect the outside light.
- If possible, avoid reflective glaring caused by electric light sources.
- Position the terminal for ideal viewing angles.

Installing the Terminal

This chapter explains how to perform an "Out-of-box" installation of a CX5 configured with the Base and how to connect optional peripheral devices. The standard items included in the box are:

- CX5 POS
- Power Supply
- Power Cord
- I/O Security Cover



CCP-79503

The CX5 comes fully assembled and ready to use. All that is required to install is connect the AC Power Cord, LAN Cable, and peripheral device cables.

For more information about the CX5 I/O ports, refer to:

- [USB Centric I/O \(Retail\)](#) on page 23
- [Serial Centric I/O \(Hospitality\)](#) on page 26



Note: The POS LCD has a protective film. After removing the film, the LCD should be cleaned. For more information, refer to [Cleaning the Touchscreen](#) on page 82.

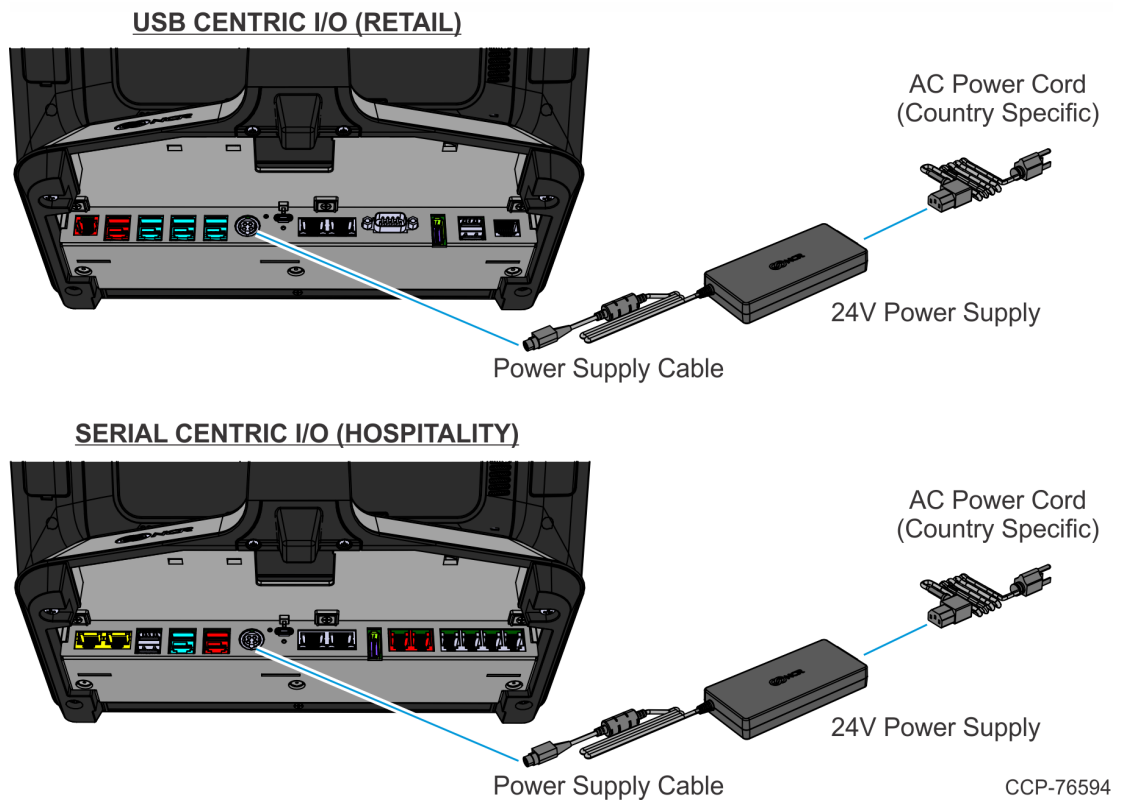
Connecting AC Power

Caution: Do not connect or disconnect the Power Cable from the terminal with the AC Power Cord connected to an AC outlet. It is recommended to disconnect the AC Power Cord from the AC outlet and wait 30 seconds before connecting or disconnecting the Power Supply cable from the terminal.

The CX5 receives power from an external 24V power brick.

Caution: The CX5 requires the NCR 24V power supply that is shipped with the terminal. Use of other power bricks may cause damage to the unit.

1. Connect the Power Supply cable to the Power In connector on the Base.
2. Connect the AC Power Cord to the Power Supply and to an AC outlet.



Connecting to a Network

Most business configurations require the terminal to connect to a network. Connecting to a network enables communicating with other systems and devices also on the network. Depending on business configurations, connecting to a network may allow connection to the Internet.

CX5 with Base or Remote I/O

To connect the CX5 terminal with a Base or Remote I/O to a network, follow these steps:

1. Connect the 10/100/1000 Ethernet Cable to the port labeled LAN In on the I/O panel. For more information, refer to [I/O Ports](#) on page 22.
2. Connect the other end of the 10/100/1000 Ethernet Cable to the network hub.



Note: Consult with your business Information Technology (IT) representative to determine the available connection, and to locate the network hub.

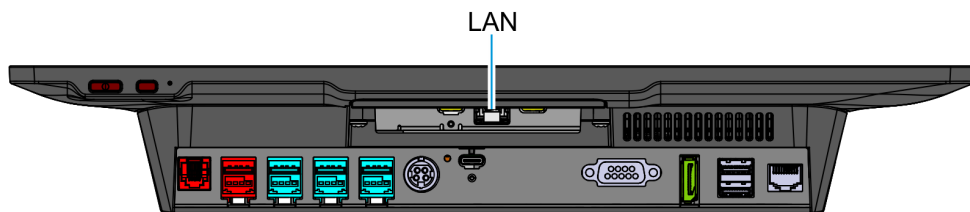
3. Connect the Flat Ethernet Cable to the port labeled LAN Out on the I/O panel. For more information, refer to [I/O Ports](#) on page 22.
4. Connect the other end of the Flat Ethernet Cable to the port labeled LAN on the CX Head. For more information, refer to [CX Head Ports](#) on page 18.

CX5 with Integrated I/O

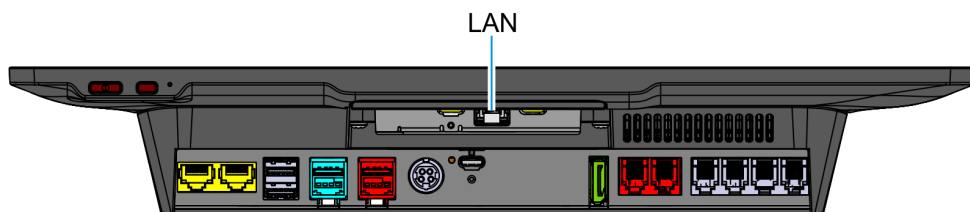
The Integrated I/O does not have a LAN port. A LAN Port is available on the Motherboard. To connect the CX5 terminal with an Integrated I/O to a network, follow these steps:

1. Connect the Ethernet Cable to the port labeled LAN on the Motherboard.

USB CENTRIC I/O (RETAIL)



SERIAL CENTRIC I/O (HOSPITALITY)



2. Connect the other end of the Ethernet Cable to the network hub.



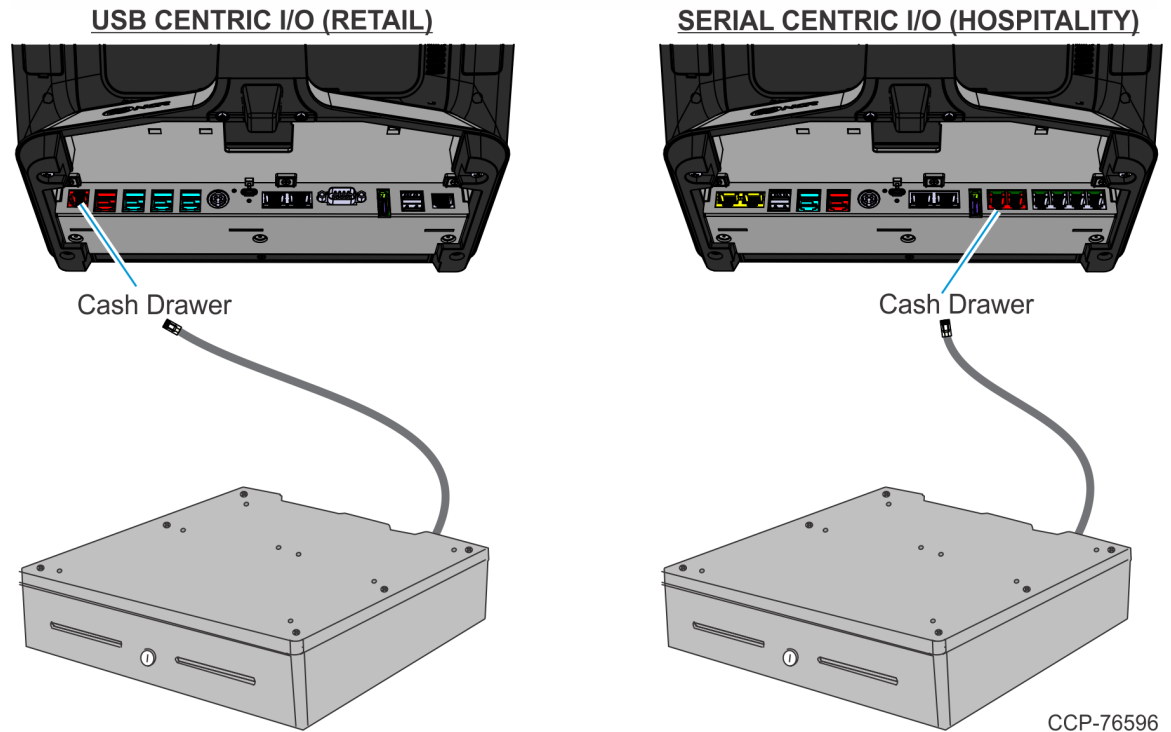
Note: Consult with your business Information Technology (IT) representative to determine the available connection, and to locate the network hub.

Installing the Cash Drawer

The Cash Drawer can be connected to the Cash Drawer connector on the Base.



Warning: Non-NCR Cash Drawers must contain a protective diode.



CCP-76596

The table below shows the cable options.

| Cable | Description | Notes |
|----------------|---|---|
| 1432-C516-0009 | Dual Cash Drawer Splitter for 24V cash drawers | Required if using two 24V cash drawers on a CX5 USB Centric I/O. |
| 1432-C517-0009 | 12V Cash Drawer (RJ12) Adaptor for Single or Dual Cash Drawer | Required if using 12V cash drawers (legacy Radiant) on a CX5 USB Centric I/O. Cable allows software to see which drawer is open/closed. |
| 1432-C828-0010 | CX7 Single Cash Drawer 6-pin to 4-pin (12V) Cable | Required if using 12V cash drawer on a CX5 USB Centric I/O or Serial Centric I/O . |

The table below shows the cable needed per configuration.

| Cash Drawer | Cable for USB Centric I/O | Cable for Serial Centric I/O |
|------------------------|---------------------------|------------------------------|
| Single 12V Cash Drawer | 1432-C828-0010 | 1432-C828-0010 |
| Dual 12V Cash Drawer | 1432-C517-0009 | 1432-C828-0010 (Qty. 2) |
| Single 24V Cash Drawer | standard option on I/O | standard option on I/O |
| Dual 24V Cash Drawer | 1432-C516-0009 | standard option on I/O |

Installing the Second Cash Drawer

A second Cash Drawer can be installed on terminals with a:

- USB Centric I/O Base — For more information, refer to [Second Cash Drawer for USB Centric I/O \(Retail\)](#) below.
- Serial Centric I/O Base — For more information, refer to [Second Cash Drawer for Serial Centric I/O \(Hospitality\)](#) on the facing page.

Second Cash Drawer for USB Centric I/O (Retail)

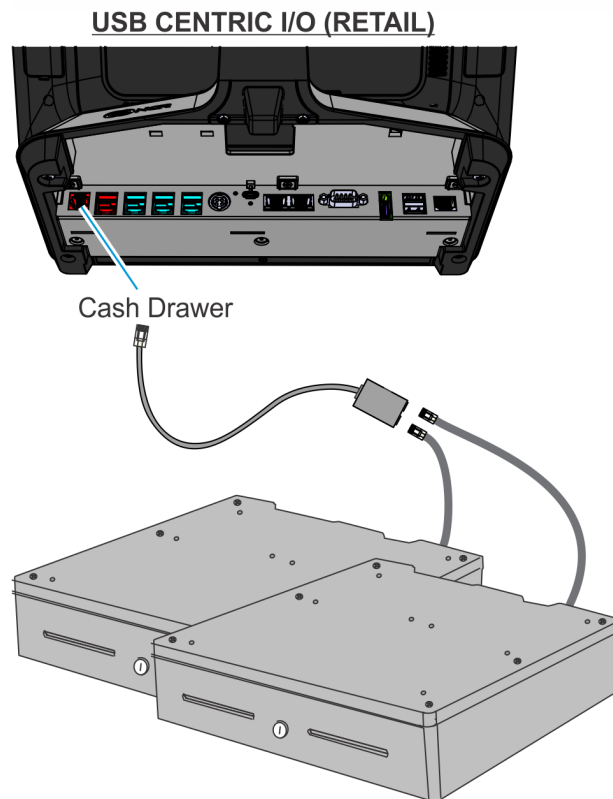
The USB Centric I/O supports a 2-drawer configuration with a Dual Cash Drawer Cable. Connect this cable to the Base or transaction printer cash drawer connector.

There are two versions of the Dual Cash Drawer Cable for the USB Centric I/O:

- 1432-C516-0009 (24V)
- 1432-C517-0009 (12V)



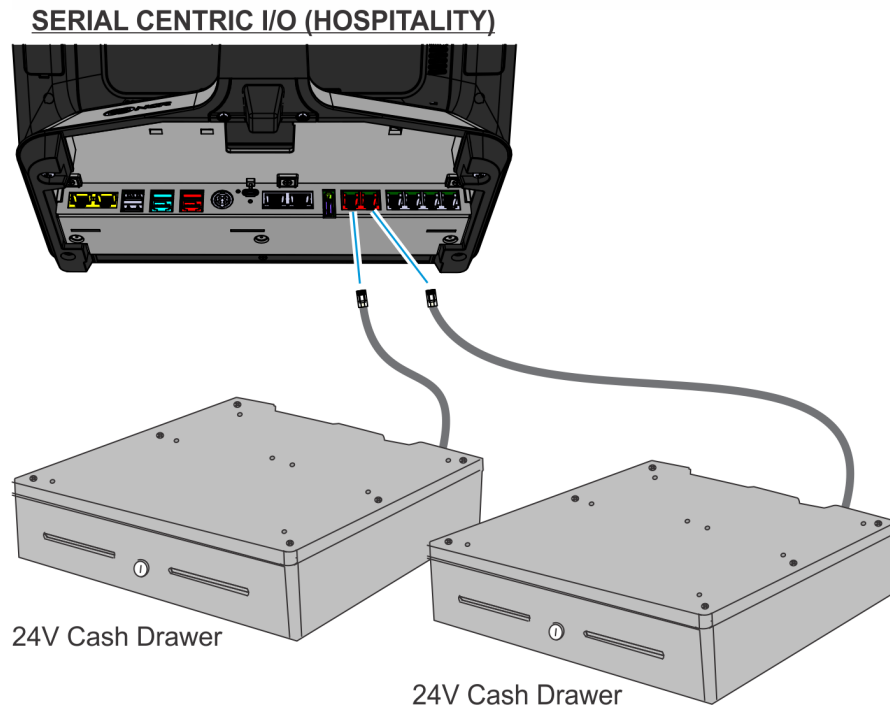
Caution: The two cables look very similar. Make sure to use the correct one. Connecting the wrong cable can cause system damage.



Second Cash Drawer for Serial Centric I/O (Hospitality)

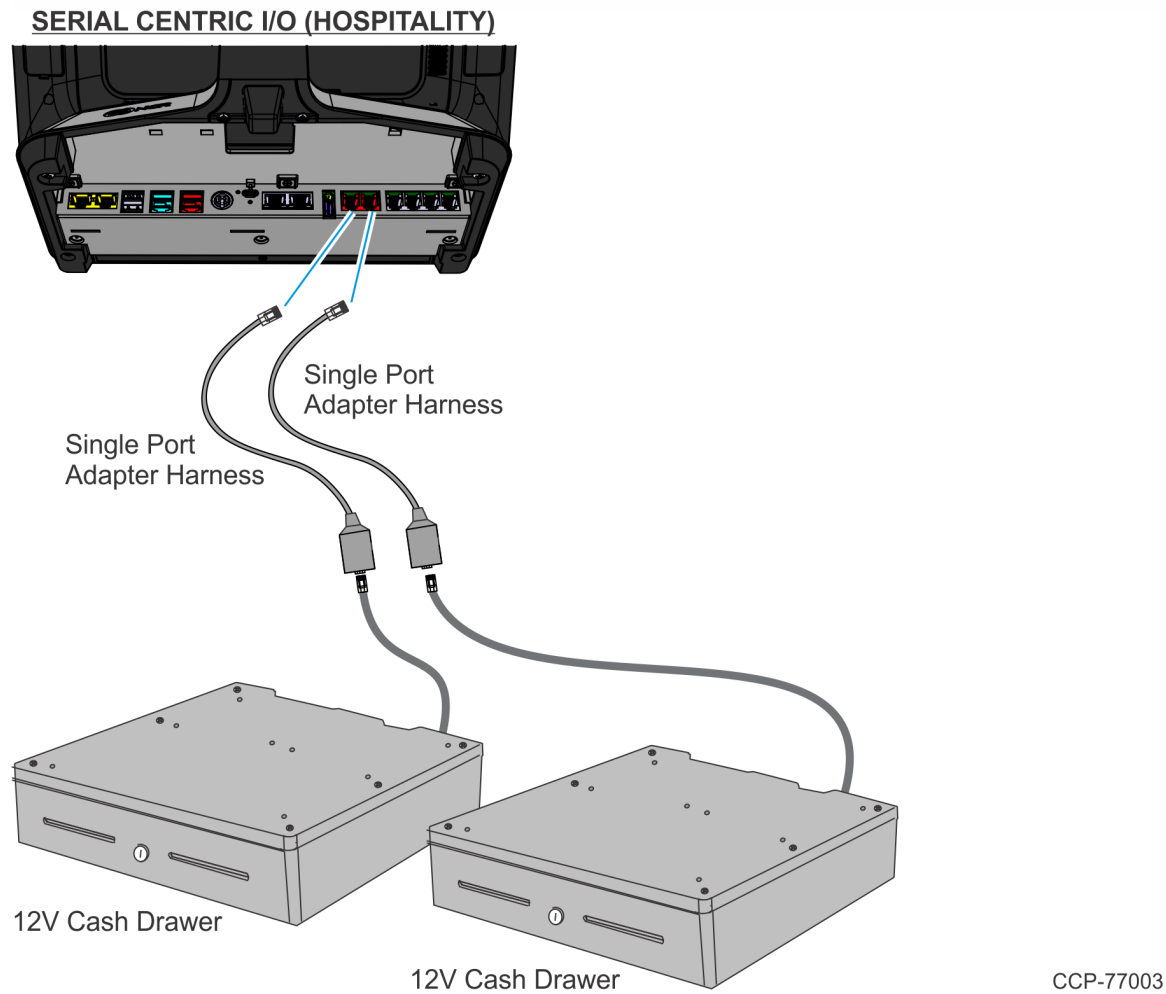
24V Cash Drawers

24V Cash Drawers can be connected to the Cash Drawer connectors on the Serial Centric I/O.



12V Cash Drawers

Single port adapter cables (1432-C828-0010) are required to connect 12V Cash Drawers to the Serial Centric I/O.



Configuring Cash Drawer Switch Polarity

Configuring the cash drawer switch polarity depends on the platform software package used. For more information, refer to:

- [Gen3](#) below
- [RPSW](#) on page 65
- [RPSL](#) on page 67
- [NCRPSW/NCRPSL](#) on page 68
- [Android](#) on page 70

Gen3

Hospitality (HSR) cash drawers all use 12V coils with *Normally Open* detection switches. By default, the Gen3 Hospitality platform software open/close sense settings is *Normally Open*. To use a drawer with *Normally Closed* detection switches (for example, Retail 24V drawer), the sense settings can be reversed through registry settings.



Note: Gen3 does not support Printer Cash Drawers.

For 64-bit operating systems

To change the sense settings for a 64-bit Operating System, configure the following registry values.

| | | Normally Open Switch Polarity (Default) | Normally Closed Switch Polarity |
|-------------------------------|--|---|---|
| | Registry | Action | Action |
| Terminal Cash Drawer 1 | HKLM/Software/Wow6432Node/Radiant/Platform/CashDrawer/ReverseOpenDetect1 | Delete the DWORD registry value or set the value of the DWORD to 0. | 1. Create a new DWORD registry value. |
| Terminal Cash Drawer 2 | HKLM/Software/Wow6432Node/Radiant/Platform/CashDrawer/ReverseOpenDetect2 | | 2. Set the value of the new DWORD to 1. |

For 32-bit operating systems

To change the sense settings for a 32-bit Operating System, configure the following registry values.

| | | Normally Open Switch Polarity (Default) | Normally Closed Switch Polarity |
|-------------------------------|--|---|--|
| | Registry | Action | Action |
| Terminal Cash Drawer 1 | HKLM/Software/Radiant/Platform/CashDrawer/ReverseOpenDetect1 | Delete the DWORD registry value or set the value of the DWORD to 0. | <ol style="list-style-type: none"> 1. Create a new DWORD registry value. 2. Set the value of the new DWORD to 1. |
| Terminal Cash Drawer 2 | HKLM/Software/Radiant/Platform/CashDrawer/ReverseOpenDetect2 | | |

RPSW

By default, the RPSW open/close sense setting is *Normally Closed*. RPSW cash drawer polarity settings can be configured in either of two ways:

- through the RSM LE utility—for both OPOS and JavaPOS
- through the registry:
 - Windows registry—for OPOS
 - `config.xml` settings—for JavaPOS

OPOS

Configuring through RSM LE utility

To change the sense settings in the RSM LE utility, configure the value of the following parameters.

| | | Normally Open Switch Polarity | Normally Closed Switch Polarity (Default) |
|--|---------------------------------|-------------------------------|---|
| | Parameter Name | Parameter Value | Parameter Value |
| Terminal Integrated Cash Drawer | <i>Model</i> | Integrated_Open | (None) |
| Printer Cash Drawer | <i>Invert CashDrawer Status</i> | True | False |

Configuring through Windows Registry

To change the sense settings in the Windows Registry, set the registry value.

| | | Normally Open Switch Polarity | Normally Closed Switch Polarity (Default) |
|----------------------------|---|-------------------------------|---|
| | Registry | Value | Value |
| Printer Cash Drawer | HKLM\SOFTWARE\Wow6432Node\OLEForRetail\ServiceOPOS\CashDrawer\<<ProfileName>\InvertCDPolarity | T | F |



Note: There are two configurations for InvertCDPolarity for RPSW in OPOS—one in the cash drawer-printer profile and one in the printer profile. When either one is updated, it should reflect on both profiles.

JavaPOS

Configuring through RSM LE utility

To change the sense settings in the RSM LE utility, configure the value of the following parameters.

| | | Normally Open Switch Polarity | Normally Closed Switch Polarity (Default) |
|--|---------------------------------|-------------------------------|---|
| | Parameter Name | Parameter Value | Parameter Value |
| Terminal Integrated Cash Drawer | <i>Model</i> | Integrated_Open | (None) |
| Printer Cash Drawer | <i>Invert CashDrawer Status</i> | True | False |

Configuring through config.xml settings

To change the sense settings in `config.xml`, go to `C:\ProgramData\NCR\NCR JavaPOS\jpos\res\config.xml` and configure the following registry values.

| | | Normally Open Switch Polarity | Normally Closed Switch Polarity (Default) |
|--|-------------------------|-------------------------------|---|
| | Registry Name | Value | Value |
| Terminal Integrated Cash Drawer | <i>Model</i> | Integrated_Open | (None) |
| Printer Cash Drawer | <i>InvertCDPolarity</i> | T | F |

RPSL

By default, the RPSL open/close sense setting is *Normally Closed*. RPSL printer-cash drawer polarity settings can be configured in either of two ways:

- through the FitClient LE utility
- through the `config.xml` settings

JavaPOS

Configuring through FitClient LE utility

To change the sense settings in the FitClient LE utility, configure the value of the following parameters.

| | | Normally Open Switch Polarity | Normally Closed Switch Polarity (Default) |
|---------------------|---------------------------------|-------------------------------|---|
| | Parameter Name | Parameter Value | Parameter Value |
| Printer Cash Drawer | <i>Invert CashDrawer Status</i> | True | False |

Configuring through config.xml settings

To change the sense settings in `config.xml`, go to `/usr/local/NCRRetail/jpos/res/config.xml` and configure the following registry values.

| | | Normally Open Switch Polarity | Normally Closed Switch Polarity (Default) |
|---------------------|-------------------------|-------------------------------|---|
| | Registry Name | Value | Value |
| Printer Cash Drawer | <i>InvertCDPolarity</i> | T | F |

NCRPSW/NCRPSL

By default, the NCRPSW/NCRPSL open/close sense setting is *Normally Closed*.

NCRPSW/NCRPSL cash drawer polarity settings can be configured in three ways:

- through the DAL (Device Abstraction Layer)
- through the configuration file
- through the Device Configuration Tool

Configuring through the DAL

To change the sense settings in the DAL, set the polarity command.

| | | Normally Open Switch Polarity | Normally Closed Switch Polarity (Default) |
|-----------------------------|--------------------------------------|-------------------------------|---|
| | Command Code | Input Parameter | Input Parameter |
| Terminal Cash Drawer | AERO_DAL_CMD_CASHDRAWER_SET_POLARITY | POLARITY_HOSPITALITY = 1 | POLARITY_RETAIL = 0 |

The command echoes back the new polarity. The table below displays the result codes.

| Result Code | Description |
|-------------------------|--|
| AERO_SUCCESS | Valid parameters and successfully set in configuration. |
| AERO_ERR_INTERNAL_ERROR | Failed to set configured polarity to requested polarity. |
| AERO_ERR_INVALID_P1 | Invalid input polarity. |

Configuring through the Configuration File

To change the sense settings in the configuration file, go to

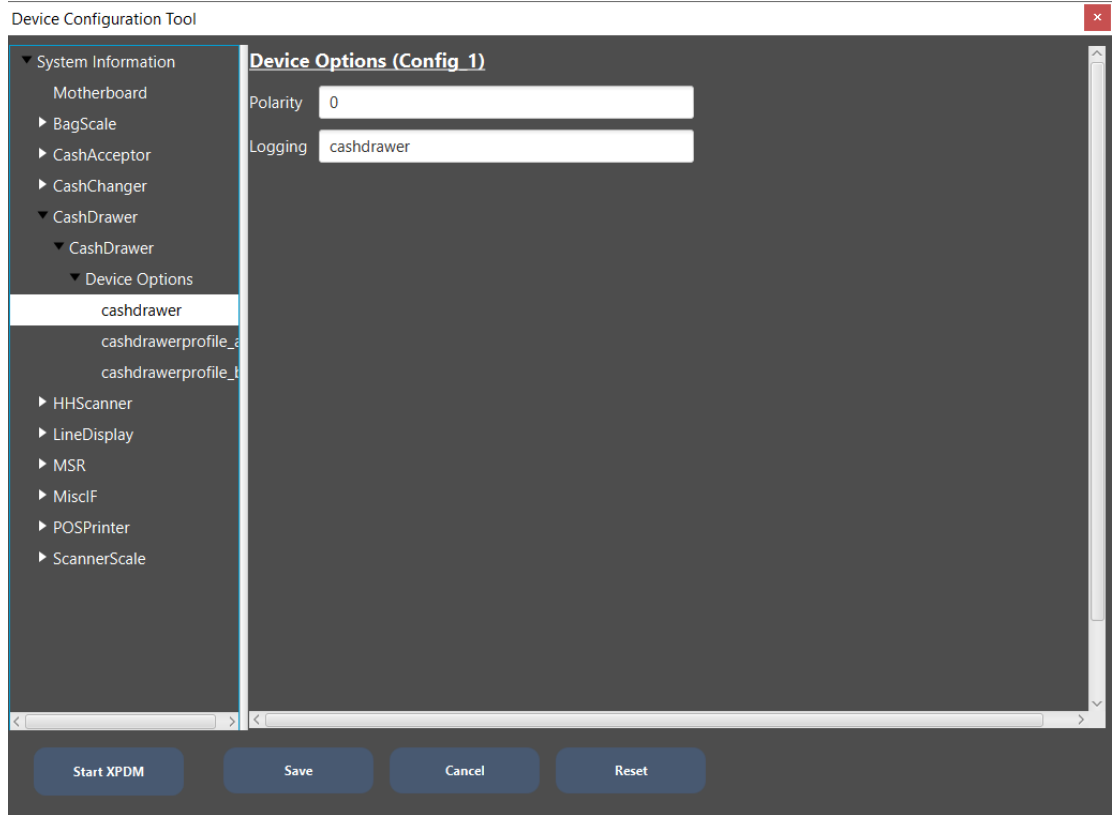
`..\ncr\aero\config\cashdrawer.factory.json` and configure the value of the following parameters.

| | | Normally Open Switch Polarity | Normally Closed Switch Polarity (Default) |
|-----------------------------|----------------|-------------------------------|---|
| | Parameter Name | Parameter Value | Parameter Value |
| Terminal Cash Drawer | <i>default</i> | 1 | 0 |

Configuring through the Device Configuration Tool

To change the sense settings through the Device Configuration Tool, follow these steps:

1. Run the Device Configuration Tool.
2. On the left pane, navigate to the device.



3. On the right pane, set the polarity:

| | | Normally Open Switch Polarity | Normally Closed Switch Polarity (Default) |
|-----------------------------|-----------------|-------------------------------|---|
| | Parameter Name | Parameter Value | Parameter Value |
| Terminal Cash Drawer | <i>Polarity</i> | 1 | 0 |

4. Select the Save button.

Android

The CX5 Android OS release V1.2.0 and above supports cash drawer switch polarity. By default, the Android open/close sense setting is *Normally Open*.



Note: Android does not support Printer Cash Drawers.

To change the sense settings, go to Settings > Cash Drawer Settings, and configure the value of the following parameters.

| | | Normally Open Switch Polarity (Default) | Normally Closed Switch Polarity |
|---|-----------------------------|---|------------------------------------|
| | Parameter Name | Parameter Value | Parameter Value |
| Cash Drawer 1 and Cash Drawer 2 (Combined) | <i>Cash Drawer Polarity</i> | Disable | Enable |



Note: The cash drawer status can be checked through the NCRPlatformTest application (if installed).

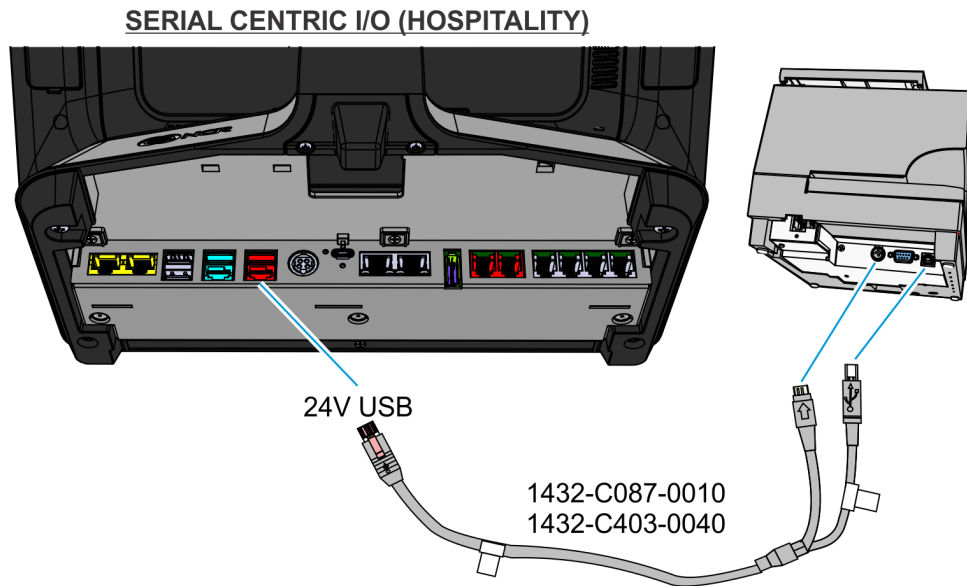
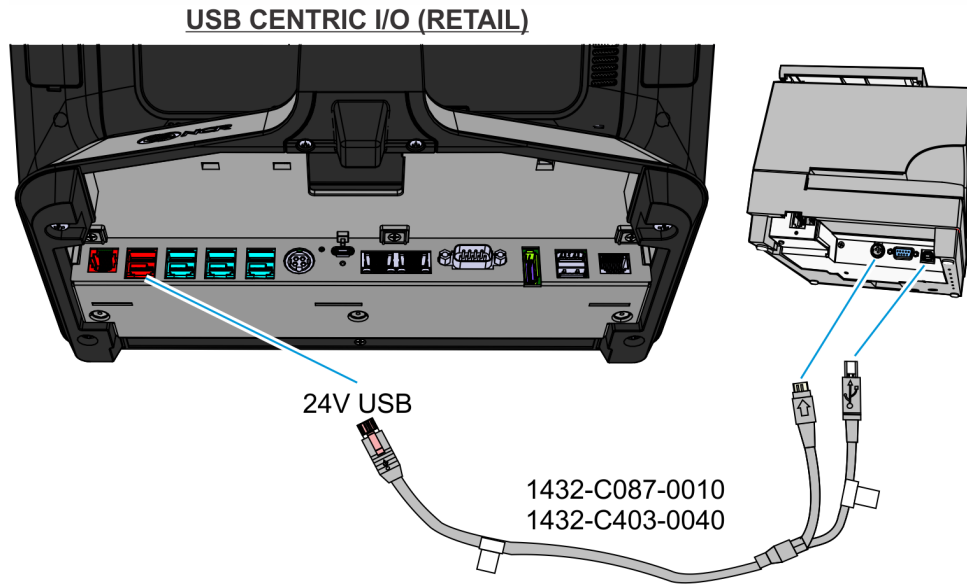
Additional Reference

For more information on cash drawer switch polarity, refer to the *CX Series (CXIO) Cash Drawer Switch Polarity* sections in the Cash Drawer Ordering Guide - Retail (OCI) and Cash Drawer Ordering Guide - Hospitality and CFR (OCI) in the NCR Seismic site (<https://ncr.seismic.com>).

Installing the Transaction Printer

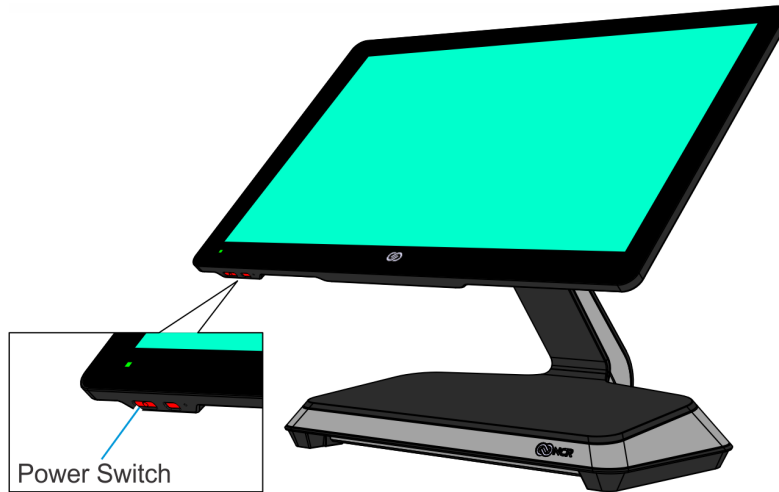
Warning: Do not hot plug the printer when connecting the POS terminal. Always power down the POS prior to connecting the printer to prevent damage to the POS and/or printer.

Connect the Powered USB Printer Interface Cable to the USB Connector and Power Connector on the printer and to the 24V Powered USB Connector on the Base.



Powering Up the Terminal

1. After installing the terminal, power up the system by briefly pressing the Power Switch. Release the Power Switch when the green LED turns on.



CCP-76588

The system installs the system devices, system settings, and then reboots to continue setup. Complete the System Setup. This varies from OS to OS but the following is typical.

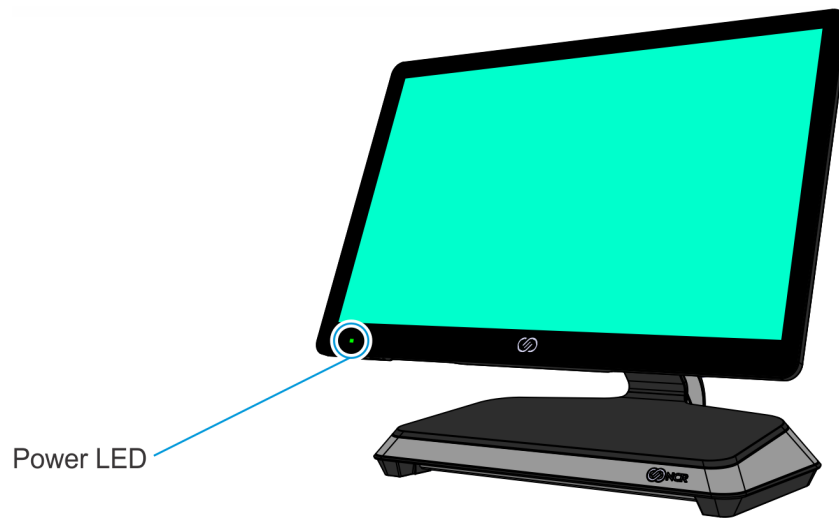
2. The initial setup procedures are performed:
 - Starting Windows
 - Preparing the computer for first time
 - Checking video performance
3. Accept the **License Terms Agreement**.



Note: Depending on the installed operating system and the selected settings, the amount of time it takes to boot up may vary.

Chapter 3: LED

Power LED



CCP-76589

The Power LED, located on the front of the display, has multiple functions as defined below.

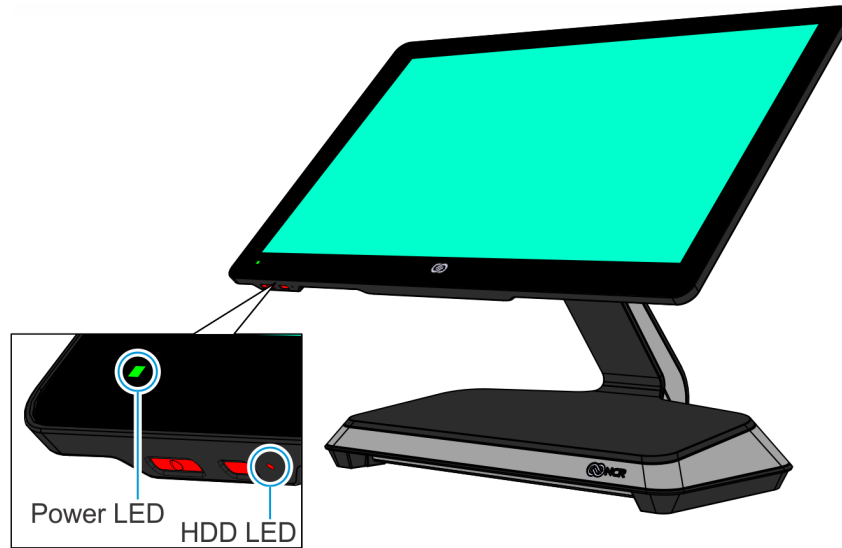
| Color | Description |
|----------------|---|
| Solid Green | Terminal is ON and all voltages from power supply and motherboard are okay. |
| Blinking Green | Terminal is in SUSPEND (S3/S4) mode. |
| Solid Red | Processor over temperature. |

Diagnostic LEDs

The Power LED and HDD LED also function as diagnostic indicators, defined below.



Note: The cell colors indicate the color of the LED at that particular time.



CCP-82163

| Current System Operation | Suspect Component/Failure | Terminal State | HDD LED | Power LED | Debug Path |
|--------------------------|---------------------------|---|-----------------------|-------------------|------------|
| Normal Operation | N/A | System ON | OFF | ON | N/A |
| Normal Operation | N/A | System ON with HDD Activity | Flashing (HDD Access) | ON | N/A |
| Normal Operation | N/A | Unit in Suspend (S3/S4) | ON | Blinking (1x/sec) | N/A |
| OFF with AC Present | N/A | OFF, Not in Standby. External power supply is on. | ON | OFF | N/A |

| Current System Operation | Suspect Component/Failure | Terminal State | HDD LED | Power LED | Debug Path |
|--------------------------|---------------------------|---|---------|--|--|
| OFF with AC Present | Power System | OFF, Not in Standby. External power supply is on. | OFF | OFF | <ol style="list-style-type: none"> 1. Check AC power to power supply. 2. Check power supply. 3. Check connection between unit and power supply. 4. Check power connection from back panel to motherboard and motherboard to front panel. 5. Replace power supply. 6. Replace motherboard. 7. Replace front panel board. |
| Runtime | Cooling Solution/CPU | Over Temperature | N/A | Flashes red/green, then solid red as temperature increases | <ol style="list-style-type: none"> 1. Check for blocked cooling vents. 2. Check for fan failure. 3. Check for excessive ambient temperature. 4. Check cooling solution. |
| POST | CPU | CPU not Operating | ON | ON | <ol style="list-style-type: none"> 1. Check for correctly installed CPU. 2. Replace motherboard. |

| Current System Operation | Suspect Component/Failure | Terminal State | HDD LED | Power LED | Debug Path |
|--------------------------|----------------------------------|-----------------------|---------------------|-----------|--|
| POST | BIOS Chip | BIOS Checksum Failure | Flashing (4x/sec) | ON | <ol style="list-style-type: none"> 1. Perform BIOS crisis recovery. 2. Replace BIOS chip. 3. Replace motherboard. |
| POST | Memory | Memory Issue | Flashing (1x/sec) | ON | <ol style="list-style-type: none"> 1. Check for properly installed memory. 2. Replace memory. 3. Replace motherboard. |
| POST | Motherboard | No Display | Flashing (1x/4 sec) | ON | Replace motherboard. |
| POST | Display, Motherboard, Peripheral | Stopped Prior to Boot | Flashing (1x/8 sec) | ON | <p>No Display:</p> <ol style="list-style-type: none"> 1. Check for power to display. 2. Check cable connection between unit/motherboard and display. 3. Check for properly functioning display. 4. Replace motherboard. <p>Display Working:</p> <ol style="list-style-type: none"> 1. Use display to determine failure point via onscreen message and BIOS setup. |

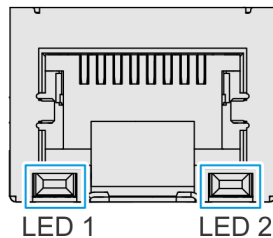
| Current System Operation | Suspect Component/Failure | Terminal State | HDD LED | Power LED | Debug Path |
|--------------------------|---------------------------|--|---------|-----------|---|
| Boot Time | Boot Media (HDD, LAN) | Display is working, but unit will not boot or it booted from wrong device. | OFF | ON | <p>HDD is Boot Device:</p> <ol style="list-style-type: none"> 1. Check HDD status in BIOS setup. 2. Check connections between HDD and motherboard. 3. Replace or re-image HDD. 4. Replace motherboard. <p>LAN is Boot Device:</p> <ol style="list-style-type: none"> 1. Check for LAN link and activity LEDs on back panel 2. Check LAN cable. 3. Replace motherboard. |

LAN Diagnostic LEDs

The LAN connector on the back on the CX Head features Activity, Link, and Speed indicator LEDs.



Note: The LAN diagnostic LEDs are only available for the CX5 with an Integrated I/O configuration.



CCP-84008

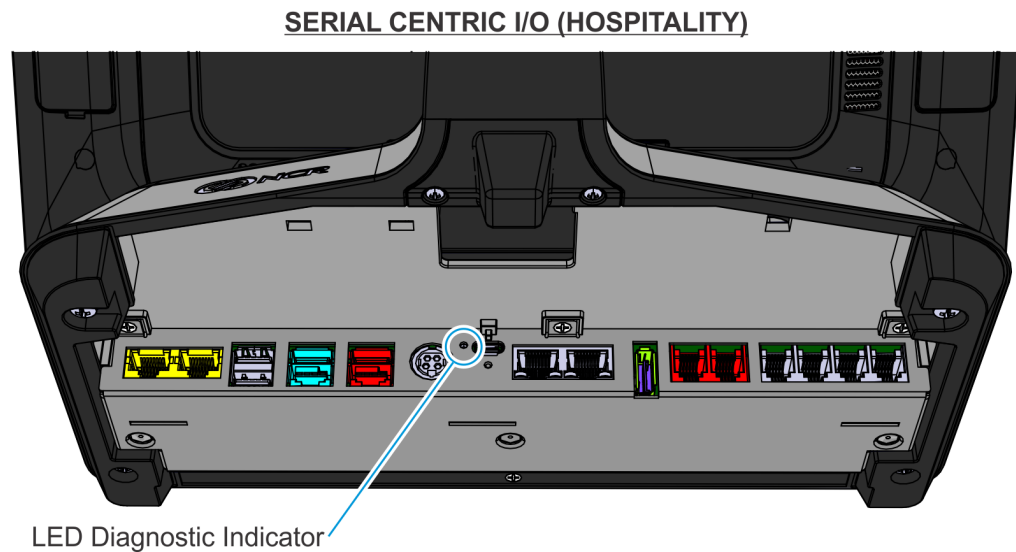
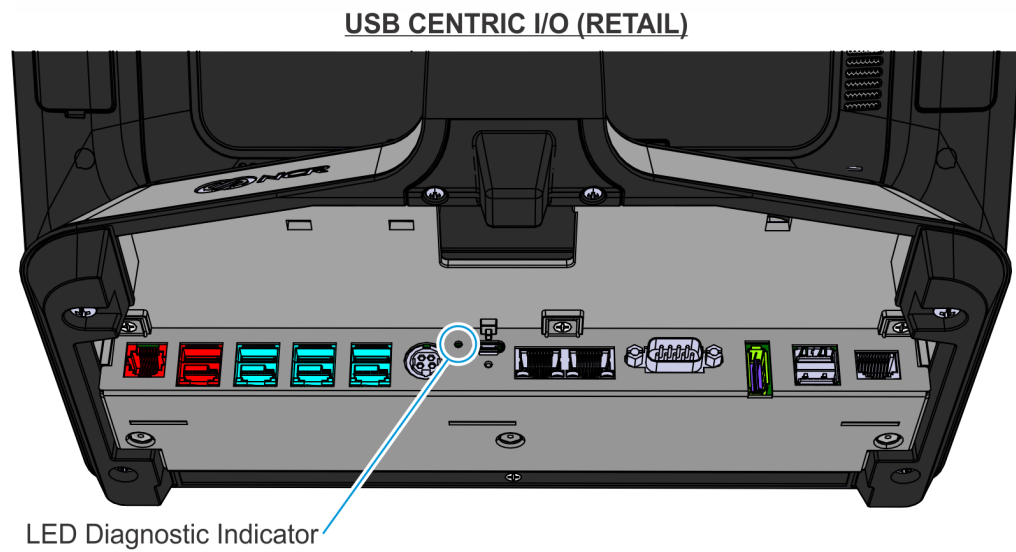
| LED | Color | Description |
|-------|--------|-------------|
| LED 1 | Green | 100 Mbps |
| | Orange | 1 Gbps |
| LED 2 | Yellow | Link Active |

I/O Panel LED

- [Base](#) below
- [Integrated I/O Expansion](#) on the facing page
- [Remote I/O Chassis](#) on page 80

Base

The Status LED is located on the I/O Panel of the Base.



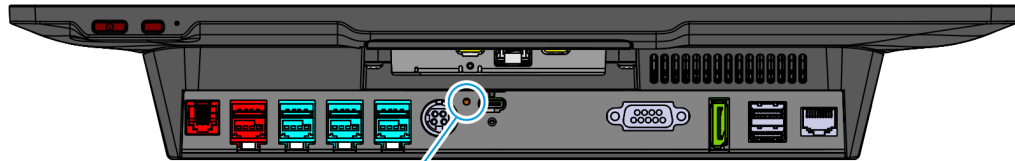
CCP-76591

| Color | Description |
|--------|-----------------|
| Green | On |
| Orange | S3 Suspend Mode |
| Off | Off |

Integrated I/O Expansion

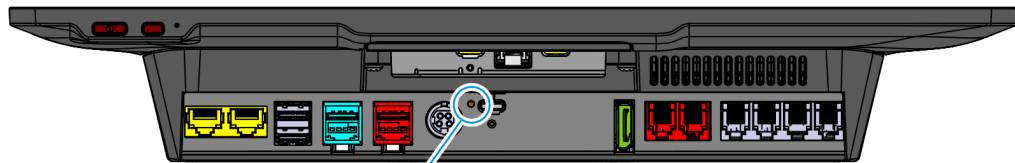
The Status LED is located on the I/O Panel on the back of the Display.

USB CENTRIC I/O (RETAIL)



LED Diagnostic Indicator

SERIAL CENTRIC I/O (HOSPITALITY)



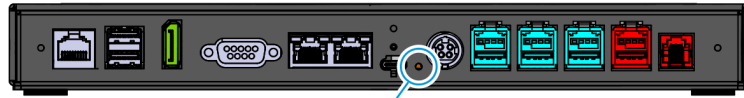
LED Diagnostic Indicator

CCP-79079

| Color | Description |
|--------|-----------------|
| Green | On |
| Orange | S3 Suspend Mode |
| Off | Off |

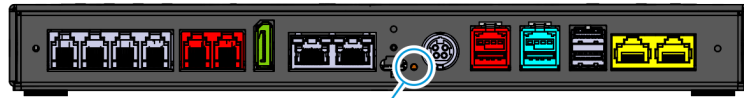
Remote I/O Chassis

USB CENTRIC I/O (RETAIL)



LED Diagnostic Indicator

SERIAL CENTRIC I/O (HOSPITALITY)



LED Diagnostic Indicator

CCP-79080

| Color | Description |
|--------|-----------------|
| Green | On |
| Orange | S3 Suspend Mode |
| Off | Off |

Chapter 4: Operation and Cleaning

Administrator Login

In order to install certain software on the terminal you may need Administrator rights.

Username: **NCR**

Password: **NCR** (Password is case sensitive.)

Projected Capacitive (PCAP) Touchscreen

The NCR CX5 All-in-One POS (7773) has a Projected Capacitive (PCAP) Touchscreen that has the following features:

- Benefits of normal capacitive touchscreens
- Fast processing of information
- High sensitivity (use conductive pencils, with hands, and with thin gloves)
- Multi-touch capability (10-finger)
- High resolution
- Improved legibility and display brightness due to optimal light transmission

In addition, the active surface of PCAP touchscreens is not directly touched and does not wear off by normal use because it is located on the back side of the touchscreen, instead of the front side. Therefore, the NCR CX5 All-in-One POS (7773) can be used in public or in severe environmental conditions.





Using the PCAP Touchscreen

To use the PCAP touchscreen, do any of the following:

- Use a single finger to resemble the left mouse button.
- Use two fingers to zoom IN (fingers brought together) or zoom OUT (fingers pulled apart).
- Use a circular motion with your finger to rotate an element on the screen. This function must be supported by either the Operating System or the application.

Cleaning the Touchscreen

Touchscreens can be effectively cleaned with water or up to 70% isopropyl alcohol solution. Follow these steps to avoid damage to the touchscreen:

-  **Warning:** Do not use sharp objects to clean around the edges of the touchscreen. Do not use abrasive cleaners (powders) or abrasive cleaning materials (scrub brush, scouring pad).
-  **Warning:** Do not use Windex or any similar alkaline (weak base) cleaner as it can degrade the anti-glare coating.
 1. Clean the screen using a non-abrasive cloth (microfiber cleaning cloth or cloth towel) and water.
-  **Warning:** Do not apply any cleaning products directly to the screen. Do not soak the cloth: wring it out before use.
 2. Dry the screen with another soft cloth.
 3. Clean the screen further using a cloth dampened with isopropyl alcohol solution, or using pre-packaged wipes.
-  **Warning:** Do not apply any cleaning products directly to the screen. Do not soak the cloth: wring it out before use.
 4. Ensure that the glass and screen edges are completely dry before using the unit.

Magnetic Stripe Reader

The Magnetic Stripe Reader (MSR) for the CX5 is an ISO 3-Track (Encrypted).

The card reading is bi-directional and can be mounted on Port A (right side) of the display.

Using the MSR

Swipe the card through the slot in the MSR in a quick and steady movement. The magnetic stripe must be facing up and with the stripe in the slot.



CCP-77870

Care of Cards

- Cards should never come in contact with liquids.
- Cards should never be bent or folded in any way.
- Cards should never come in close proximity of a magnetic field.

Card Thickness

The MSR module accepts standard cards within the thickness range of 0.68–0.84 mm.

Cleaning the MSR

Customers who are participating in the NCR Partnership Services Program can purchase cleaning cards through NCR Services using the NCR Part Number.

| Part | NCR Part Number |
|------------------------|-----------------|
| MSR Cleaning Card, Wet | 603-9015143 |

Cleaning Frequency

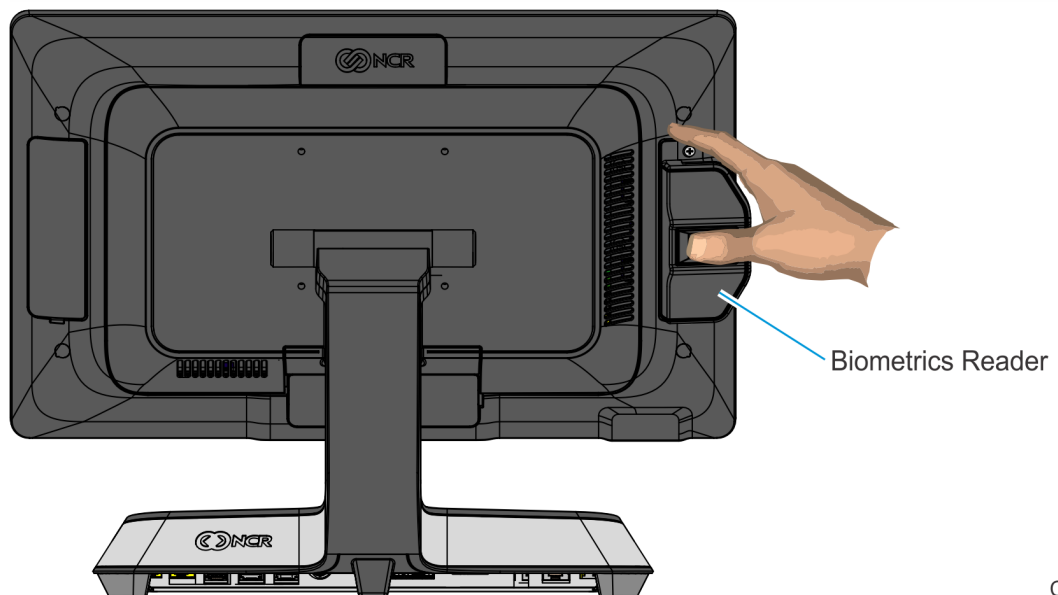
For low use retail establishments, the cleaning procedures should be followed at least once per month. In areas of extremely high traffic (in excess of 500 swipes per day) or an operating environment that is high in contaminants, such as found in the food service industry, a weekly cleaning should be performed.

Biometrics Fingerprint Reader

High quality fingerprint templates are imperative for the security of the biometric security system. Low quality fingerprint templates can impact future read rates. Therefore, using the Biometrics Module should be done very carefully. In case of inexperienced users who are using the module for the first time, the process should be assisted (guided) by an administrator or experienced user.

Using the Biometrics Reader

Place your thumb/finger flat and straight on the sensor. If this is not possible, try to place your thumb/finger on the sensor in the same angle every time.



CCP-77871

Under normal usage conditions dirt, residue, oils, and other materials can collect on users' fingers. This can possibly cause poor collection of fingerprint data, which can cause performance degradation. For the best results it is recommended that the user keep their fingers relatively clean and free of residues that may alter the sensor performance.

Scotch tape can be used to clean fingers. Adhere the tape to the finger and then pull it off.

Cleaning the Sensor

Before each authentication, it is recommended that the user first clean the sensor. Place adhesive tape onto the sensor and then pull it off. This assures that residue from previous usage is removed.



Caution: Do not use abrasive materials to clean the sensor.

Software Drivers

The CX5 biometrics reader is a digitalPersona U.ARE.U 4500 Module. Please visit the Crossmatch website for drivers and application developer tools.

<https://www.crossmatch.com/company/support/request/>

Cleaning the CX5 Cabinet

1. Disconnect the unit from the AC outlet before cleaning.
2. Wipe the cabinet using a non-abrasive cloth (microfiber cleaning cloth or cloth towel) dampened with soap and water solution.

Warning: Do not use alcohol (methyl, ethyl, or isopropyl) or any strong dissolvent. Do not use thinner or benzene, abrasive cleaners (powders), abrasive cleaning materials (scrub brush, scouring pad), or compressed air. Do not use any other types of cleaners such as vinegar, solvents, degreasers, or ammonia-based cleaners. These can damage the unit.

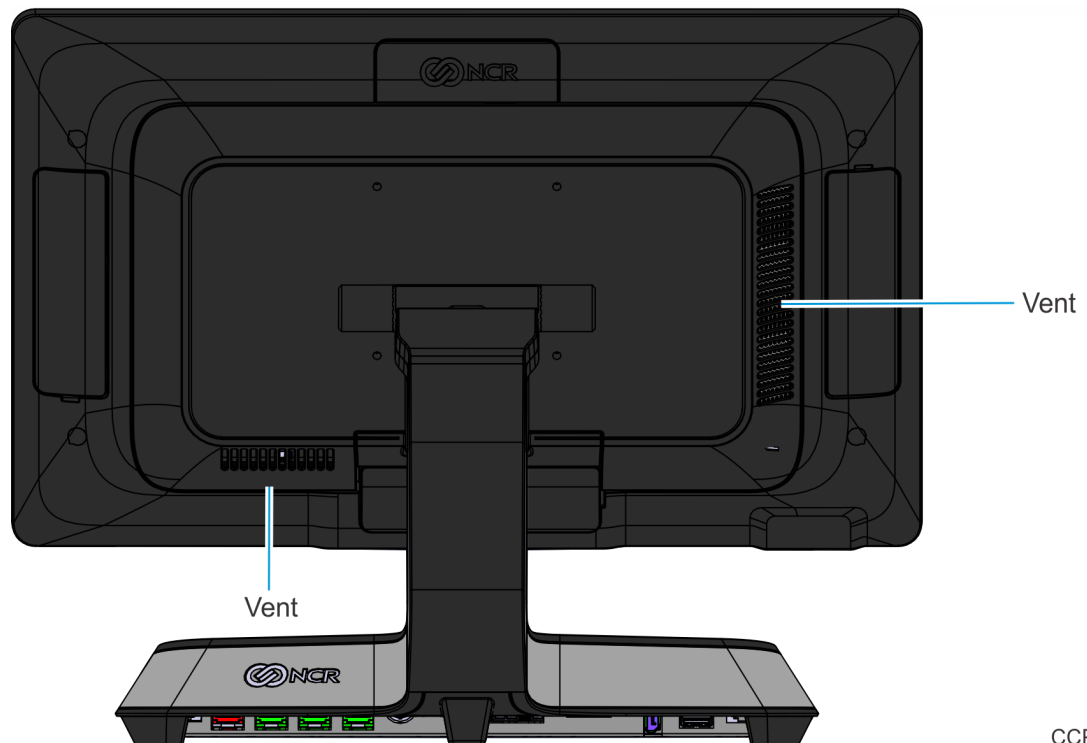
Warning: Avoid getting liquids inside the unit. If liquid does get inside, have a qualified service technician check it before you power it on again.

3. Wipe the cabinet using a clean and dry lint-free cloth.
4. Remove external dust around the cooling vents.

Cleaning the Cooling Vents

The air vents on the back of the terminal should be cleaned periodically to maintain optimum cooling for the CPU.

Use the hose attachment on a standard household vacuum cleaner to remove the dust from the vents.



Chapter 5: Disk Image Backup and NCR Image Recovery Tool

Introduction

This section discusses procedures on how to backup or recover the POS image. The terminal has a recovery tool that performs a complete backup of the whole HDD/SSD. This includes the operating system, all files, data and the database itself if it is installed on the HDD/SSD, making an exact duplicate of everything contained on the terminal.

The NCR Image Recovery Tool uses the Windows Image (.WIM) file format to store the OS image. This is a file-based format for use with the ImageX and DISM tools that Microsoft created for use with Windows Vista and later OS versions. The format can also be used to capture and restore XP-based OS images. More information on the ImageX tool and .WIM format can be found at:

[http://technet.microsoft.com/en-us/library/cc722145\(W.S.10\).aspx](http://technet.microsoft.com/en-us/library/cc722145(W.S.10).aspx)

The NCR Image Recovery Tool is designed to create a complete backup of, or restore, a previously saved image to the terminal.

The NCR Image Recovery Tool offers the following functions and features:

- Multi-language support for the following languages: EN, DE, FR, IT, ES
- Check and Repair Disk
- Backup the System
- Restore the System to a previous state
- Password Protection
- Network support

You can save and restore your backup from different locations:

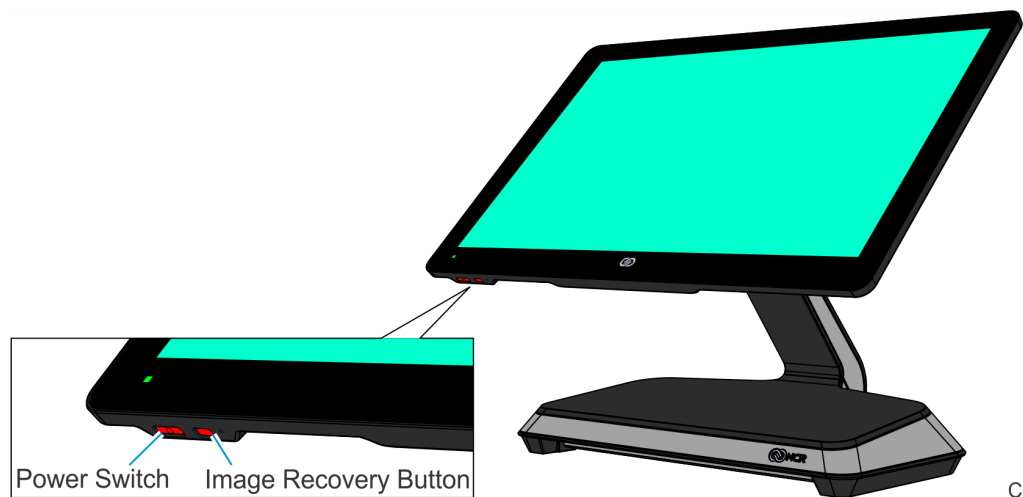
- Network
- USB Drive
- Hard Drive/Solid State Device (if present on the terminal)

Running the NCR Image Recovery Tool

Starting the NCR Image Recovery Tool

The Image Recovery Button is located on the bottom of the display.

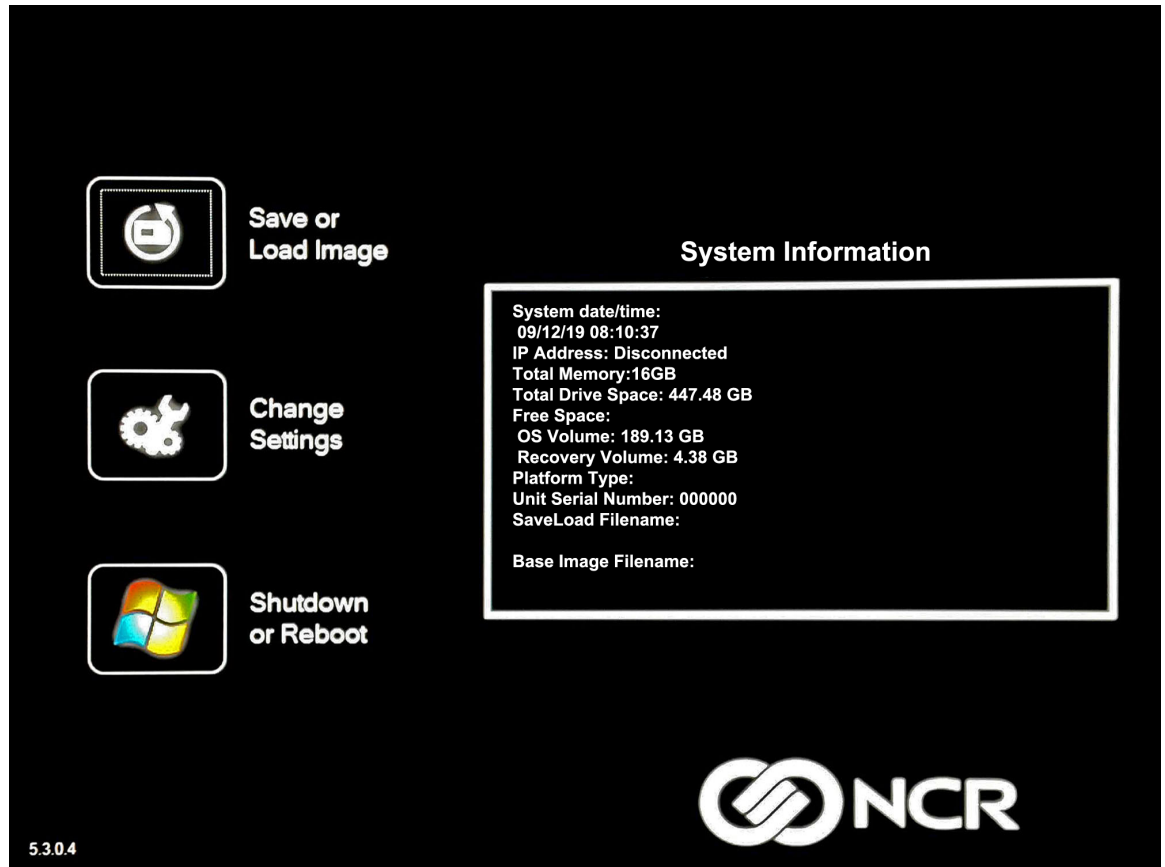
1. Begin with the terminal OFF.
2. Press and hold the recessed **Image Recovery Button**. While holding the **Image Recovery Button**, momentarily press the **Power Switch**.
3. Continue holding the **Image Recovery Button** until the NCR logo has flashed on the screen.



CCP-76598

Main Screen

When the terminal boots the *Main Screen* is displayed.



Save or Load Image

This button opens the *Backup and Recovery* screen.

Change Settings

This button opens a dialog screen to let you set/change the password and to configure the network settings.

Shutdown or Reboot

This button opens the screen to properly *Shutdown* and *Reboot* the POS.

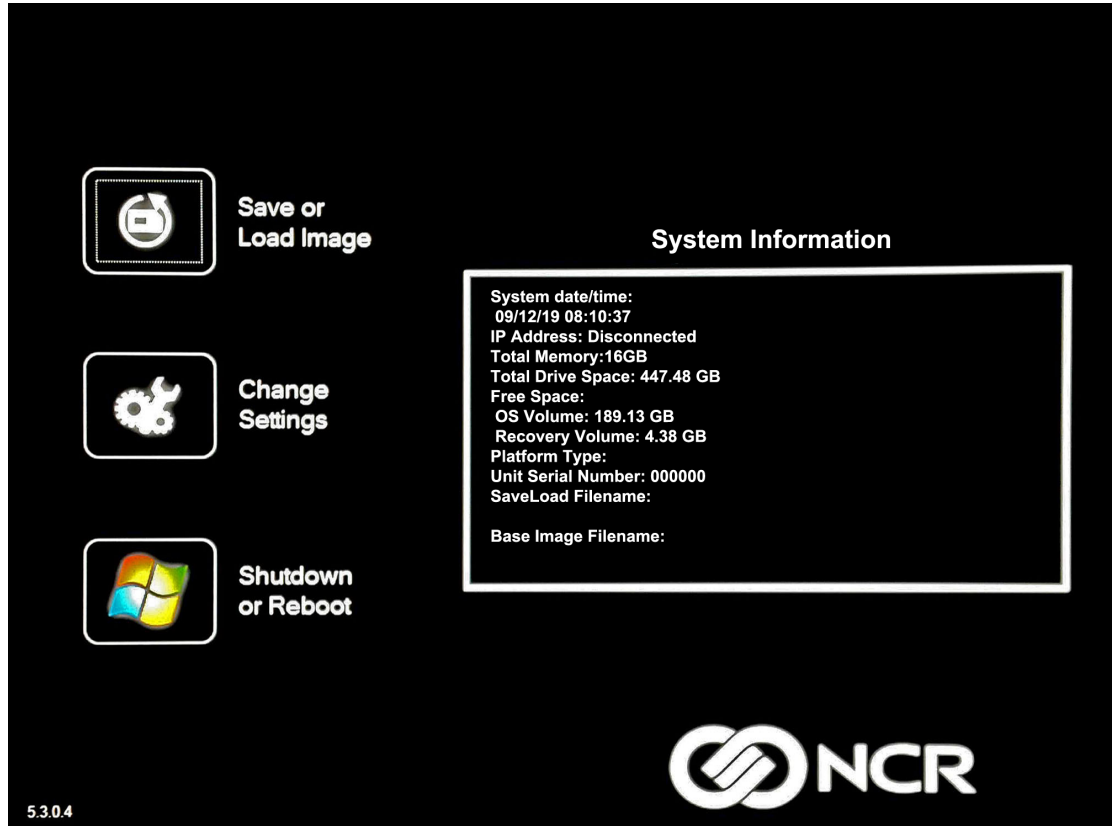
System Information

This is where useful information of the POS is displayed, such as Serial Number and Image Names.

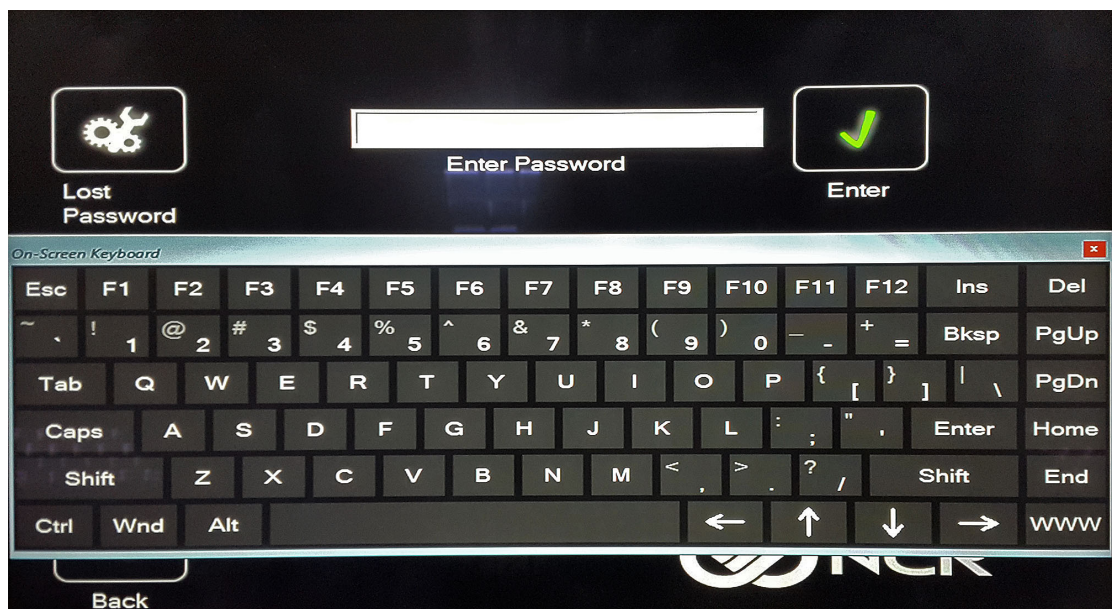
Save or Load Image

This function is used to either *Save* or *Load* an image from a device.

1. On the *Main Screen*, select **Save or Load Image**.

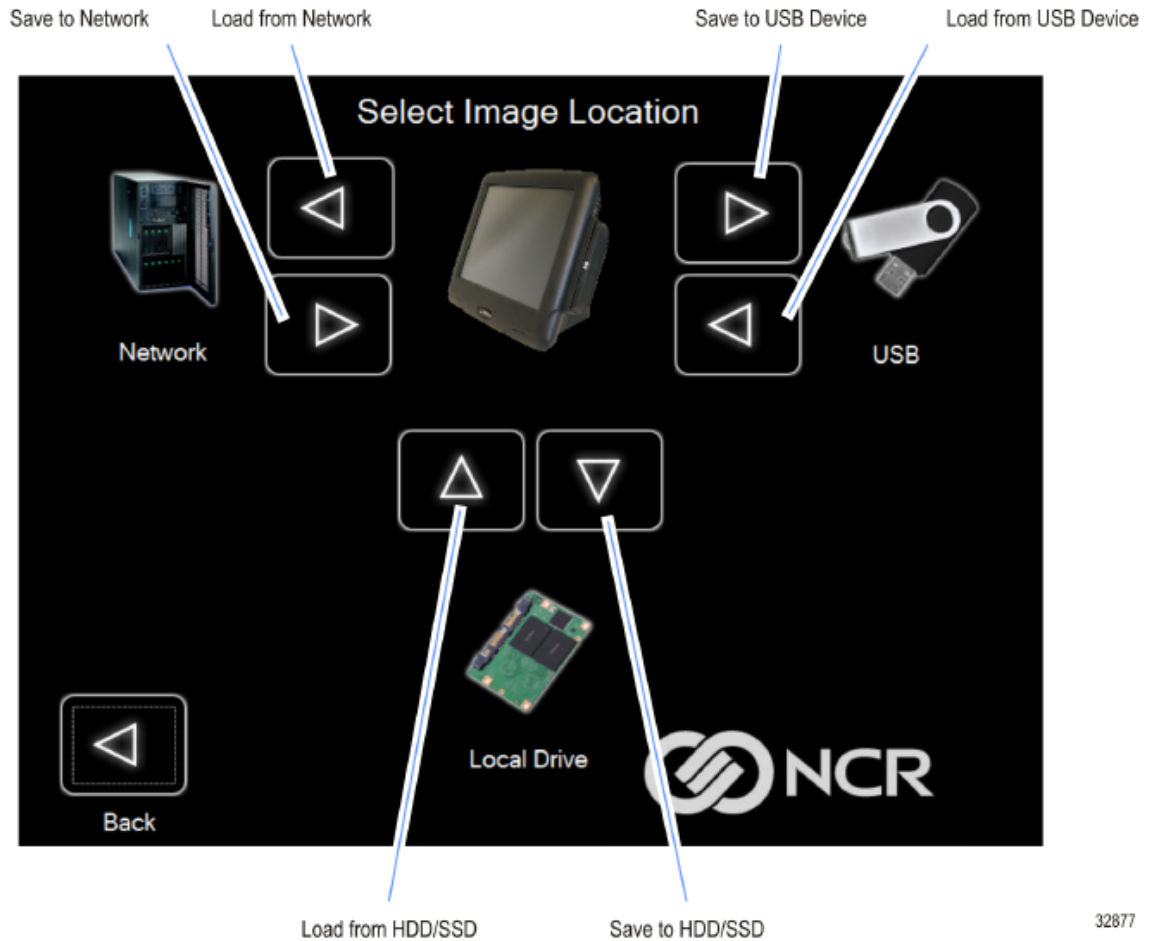


2. Enter the **Password**. The factory default password is **Recovery1234**.



Saving an Image

The *Select Image Location* screen displays a terminal with three sets of *In/Out* arrow buttons, indicating the direction of data flow when selected. Arrows pointing away from the terminal are used to *Save* images to a device. Arrows pointing towards the terminal are used to *Load* an image.



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Recovery Partition Size

The size of the Recovery Partition is limited to 8GB on the local drive. The USB and network options can be used to store / backup larger images. The total size is comprised of the base factory image + the user and site backups and the roughly 300MB of space used by WinPE and apps. USB/Network backups are limited only by the hardware that they are being stored to.

After the factory image is copied into the Recovery Partition, there is approximately 3GB remaining in the 8GB partition. Any data stored as an incremental backup to this location is compressed. A typical, large POS software installation will not outpace the constraints of the local storage.

Backups to separate *slots* in the NCR Image Recovery Tool only increase the total storage required by the amount of data *added* to the image. When the contents of the OS partition become too large to store in the 8GB local Recovery Partition, then one of the alternate storage methods available (USB or network) should be used to store backups.

Output Options

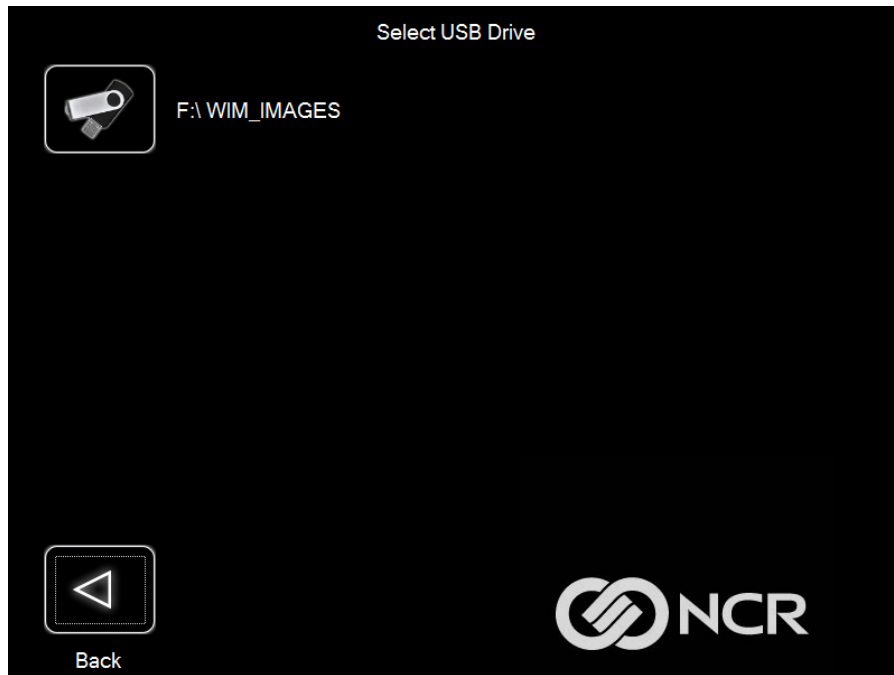
There are three output options:

- Hard Disk Drive/Solid State Device
 - USB Device
 - Network
1. Select the arrow that points to the desired output.

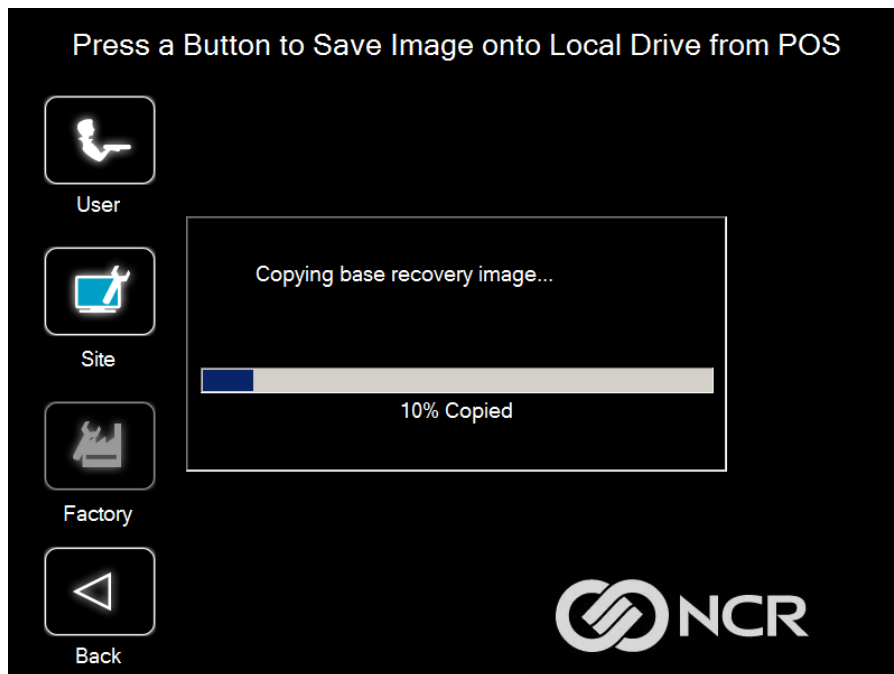
Example: Select the **USB Save Button**.



2. Select the **USB Button**.



If this is the first backup performed on this POS, the image is automatically saved as a *Site* backup.

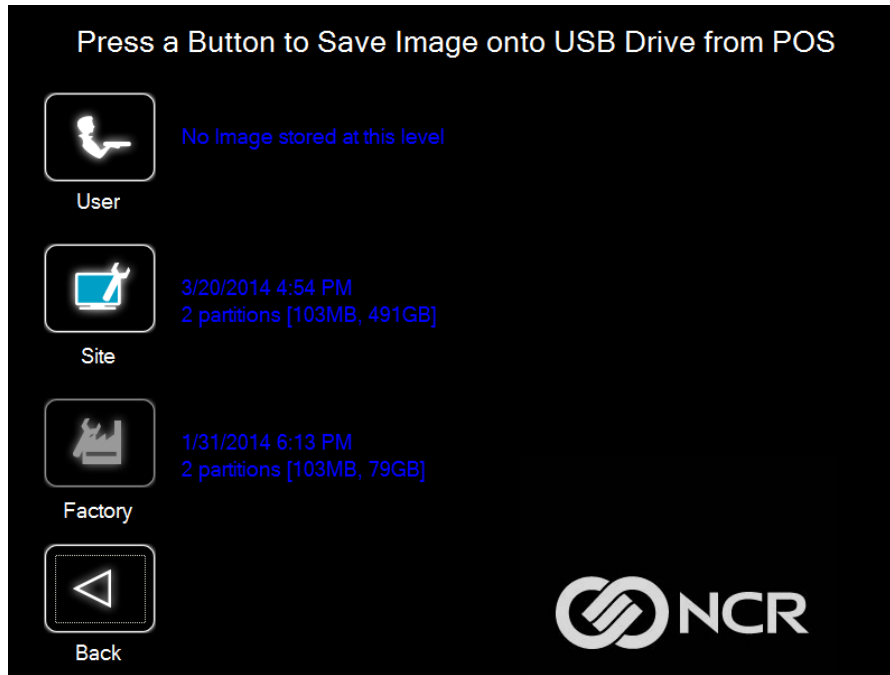


If a backup already exists, you have the choice of performing either a *Site* or *User* backup.

- **Site Image** – Use this option immediately after all application components have been loaded and set up for initial operation, or for base image updates.
- **User Image** – Use this option for routine day-to-day or periodical backups.



Note: *Site* and *User* backups are separate independent backups.



The image information is updated with the new image date.

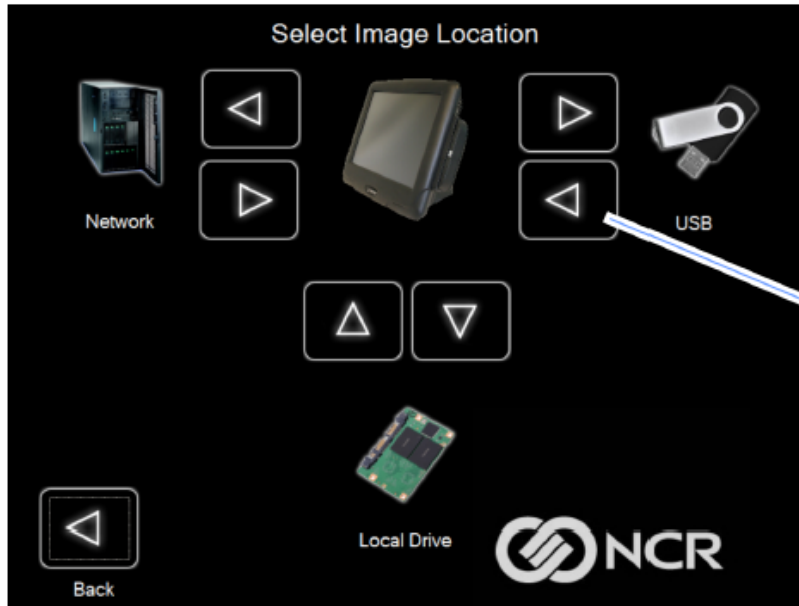
Loading An Image



Caution: Do NOT remove power during an Image Load. Complete the Operating System setup and then shut down Windows properly. Removing power prematurely will corrupt the image and display various messages like "Windows failed to load" or "missing or corrupt registry". If this happens you can do an Image load of the Factory image with the NCR Image Recovery Tool.

1. Select the arrow that points from the desired load device to the terminal.

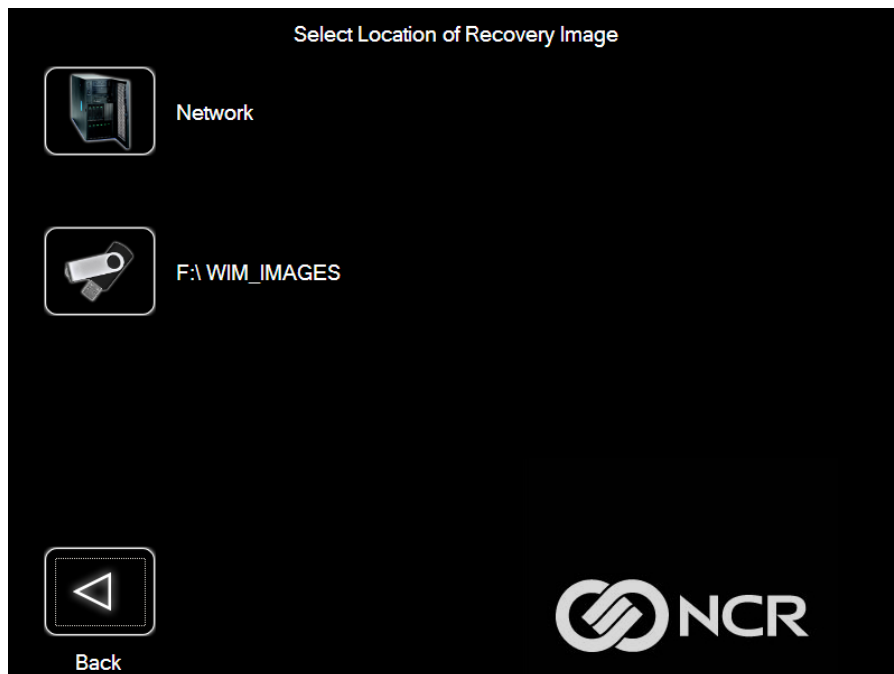
Example: Select the **USBLoad Button**.



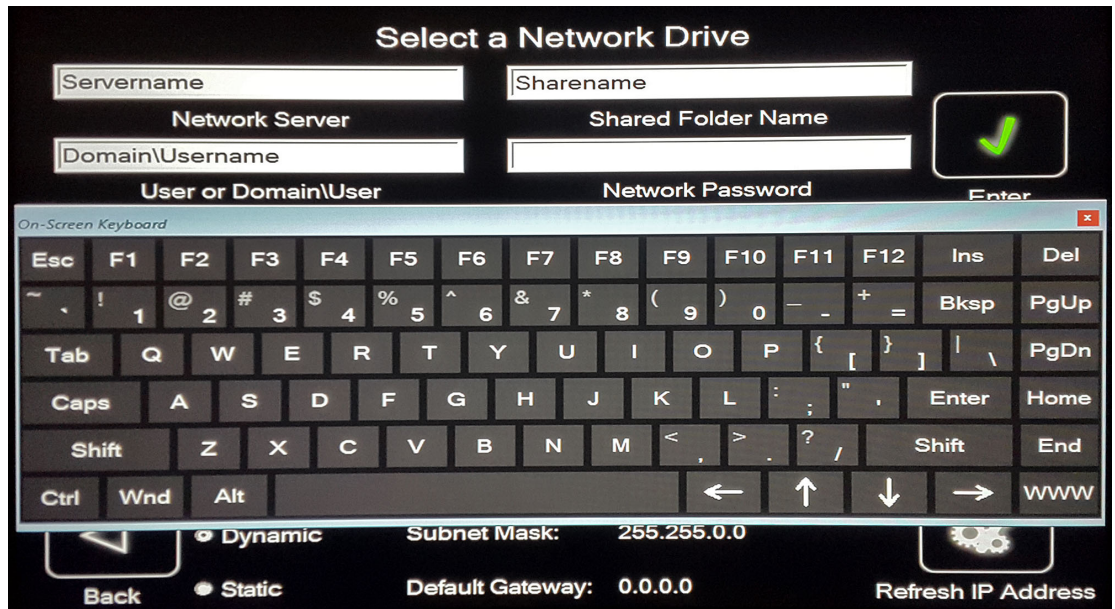
Load From a USB Device

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2. Select the **USB Button**.

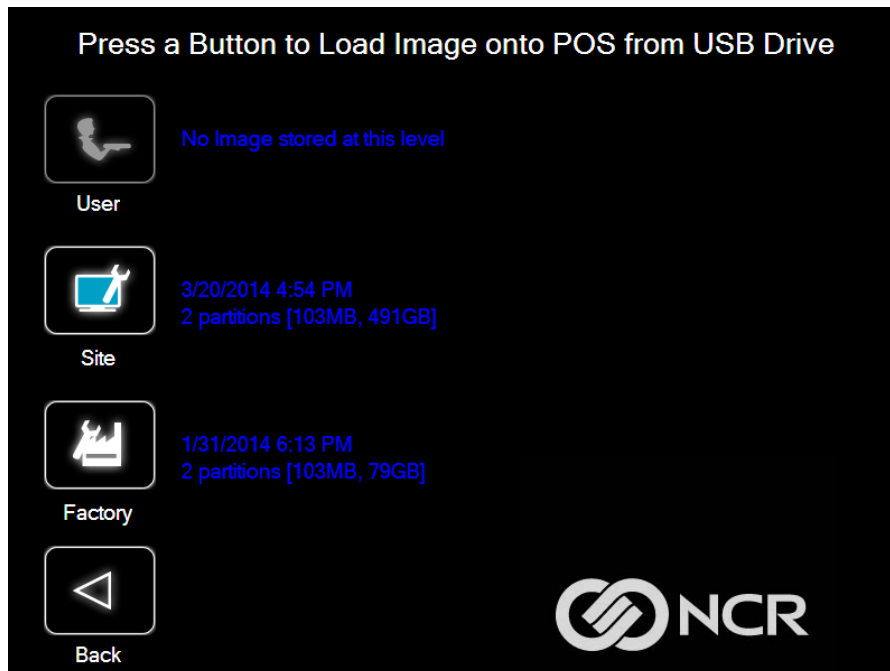


If you are loading from a network, the *Select a Network Drive* dialog screen will open.



3. Select the *Image Type*.

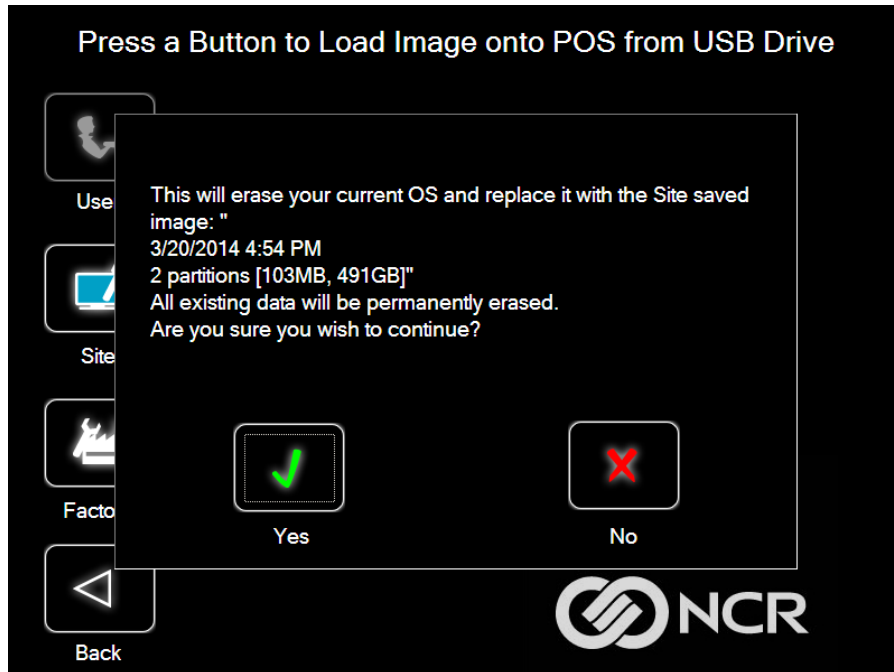
- **User Image** – Most recent routine backup.
- **Site Image** – Image of the terminal after application components were loaded.
- **Factory Image** – The NCR Base Image as shipped from the factory.



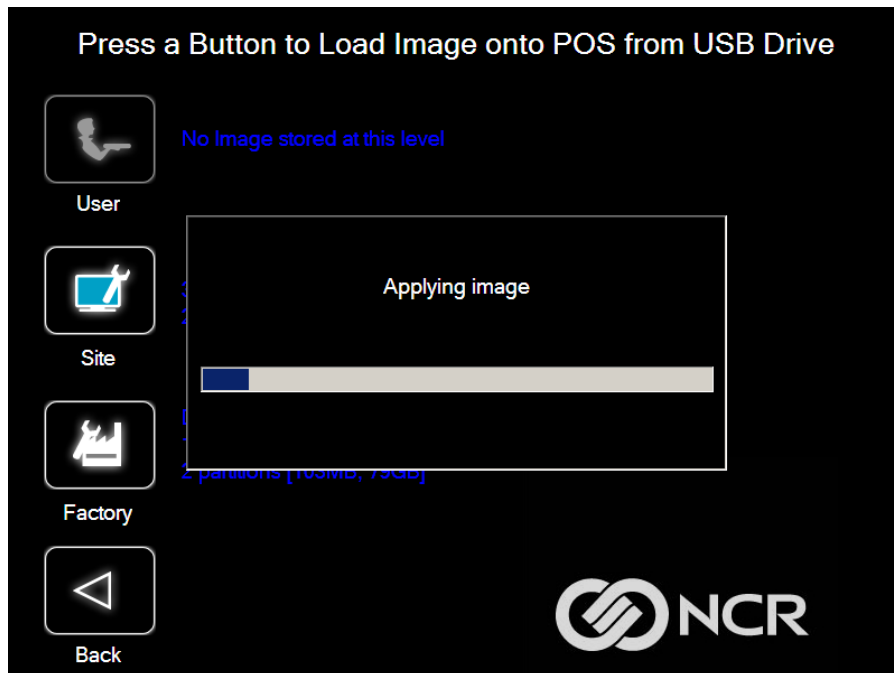
- 4. Select **Yes** to apply the image.



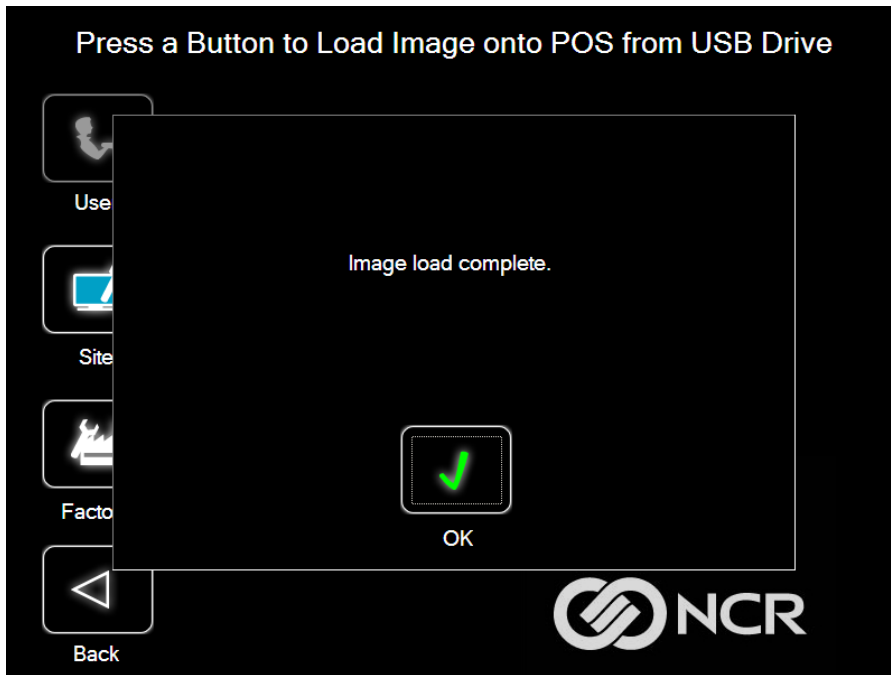
Caution: All the information in the current productive/working image on the drive is lost with this operation!



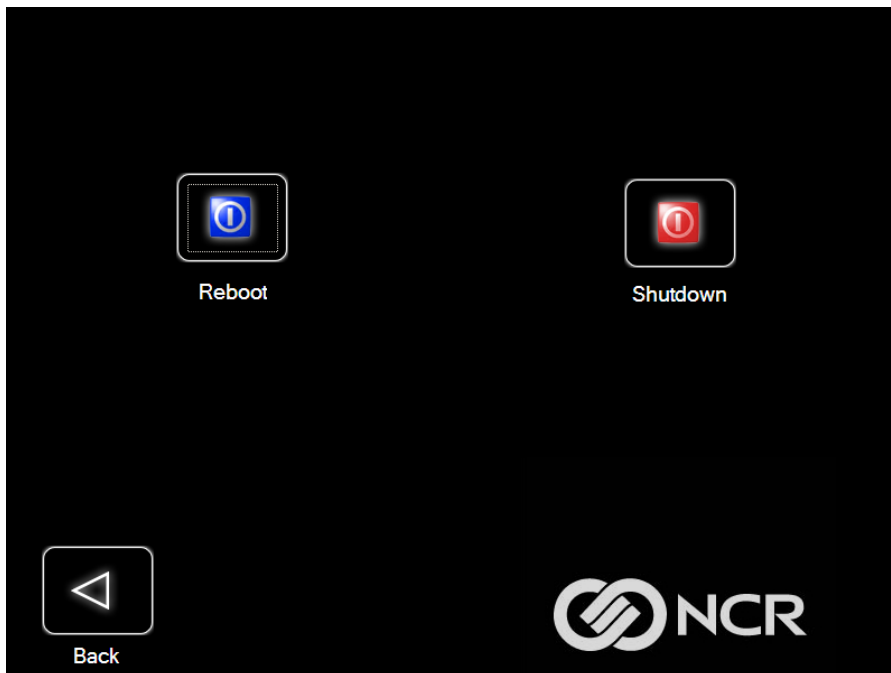
A progress bar is displayed as the image is applied.



A message is displayed when the load is complete.

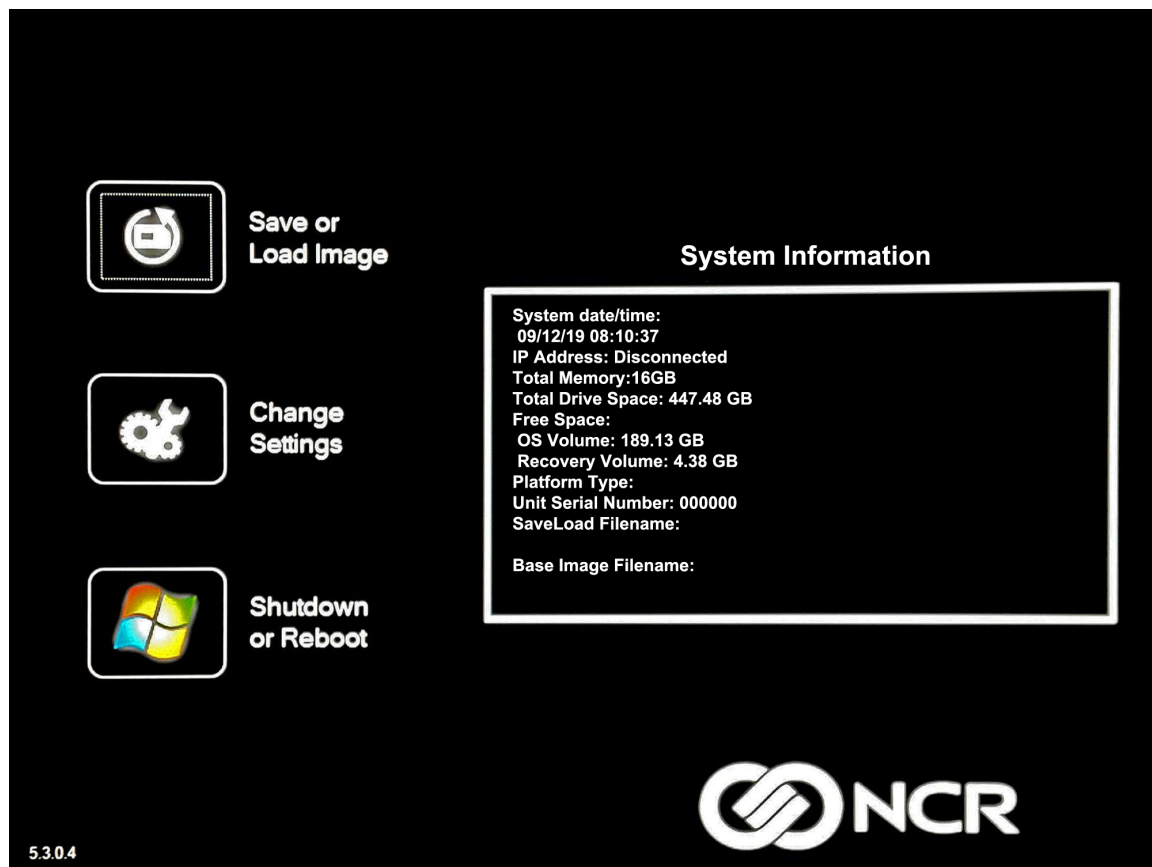


5. **Reboot** the POS.



Change Settings

On the *Main Screen*, select **Change Settings**.

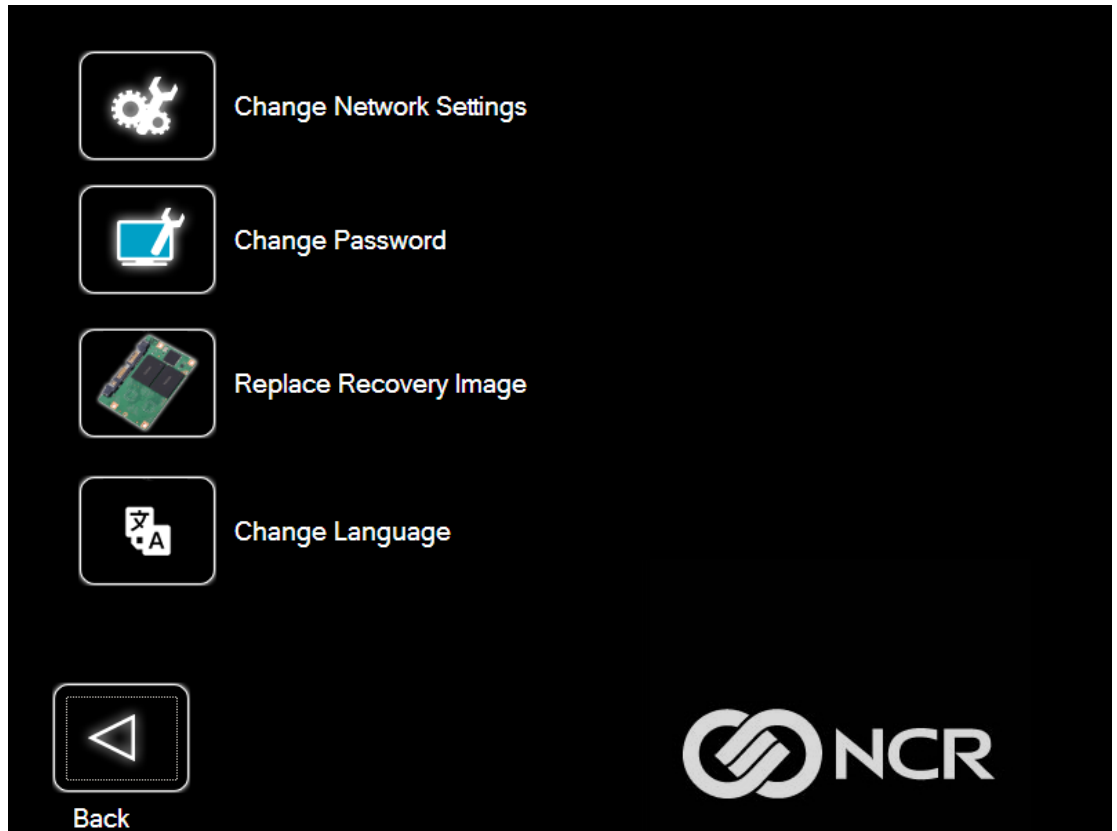


There are four functions available on the *Change Settings* screen:

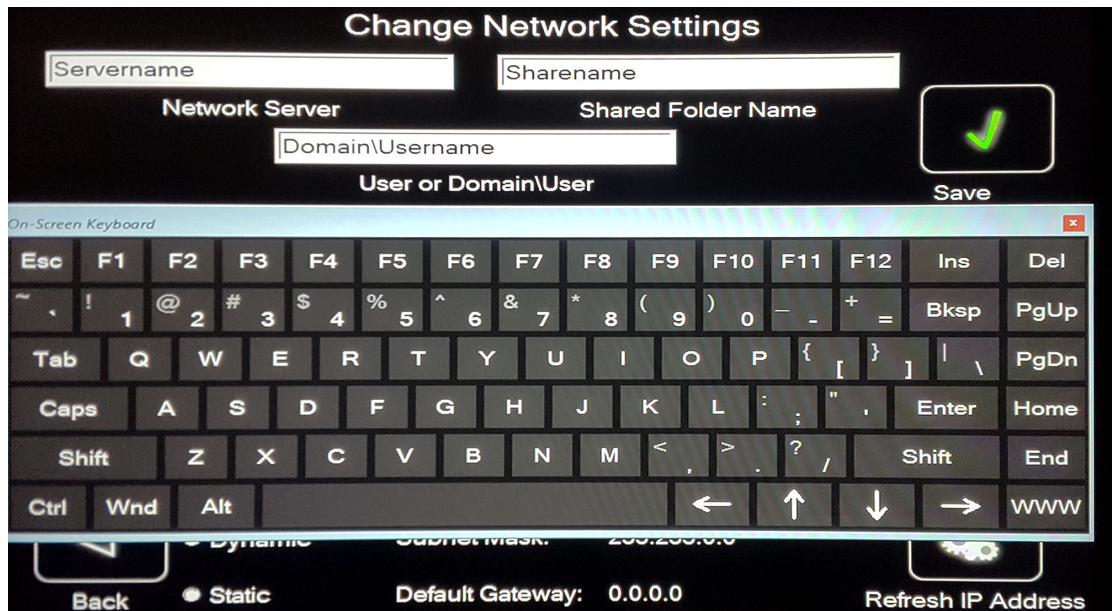
- Change Network Settings
- Change Password
- Replace Recovery Image
- Change Language

Change Network Settings

1. On the *Change Settings Screen*, select **Change Network Settings**.

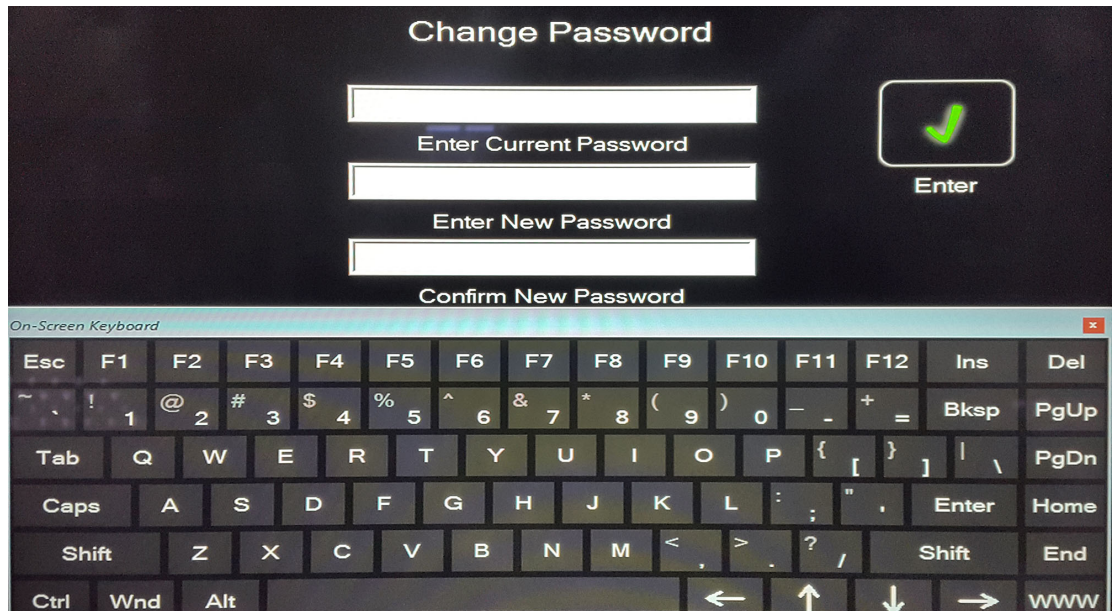


2. Enter the network configuration settings and then select **Save**.

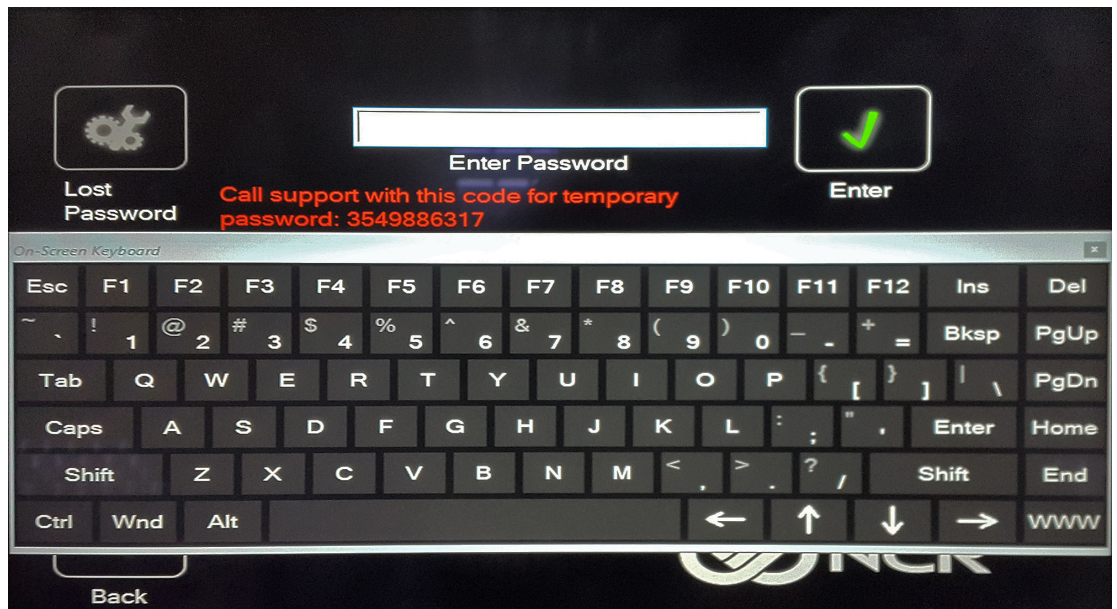


Change Password

1. On the *Change Settings Screen*, select **Change Password**.
2. Enter the current password and the new password, and then select **Enter**.



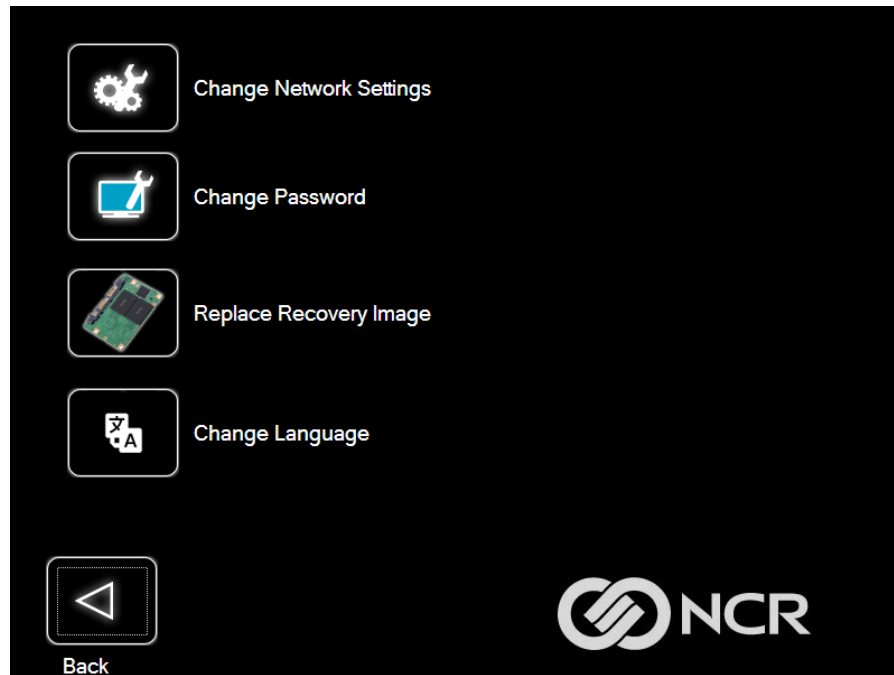
If you have forgotten or lost the password, select Lost Password. A unique code is generated that you can provide to NCR Support to receive a new temporary password.



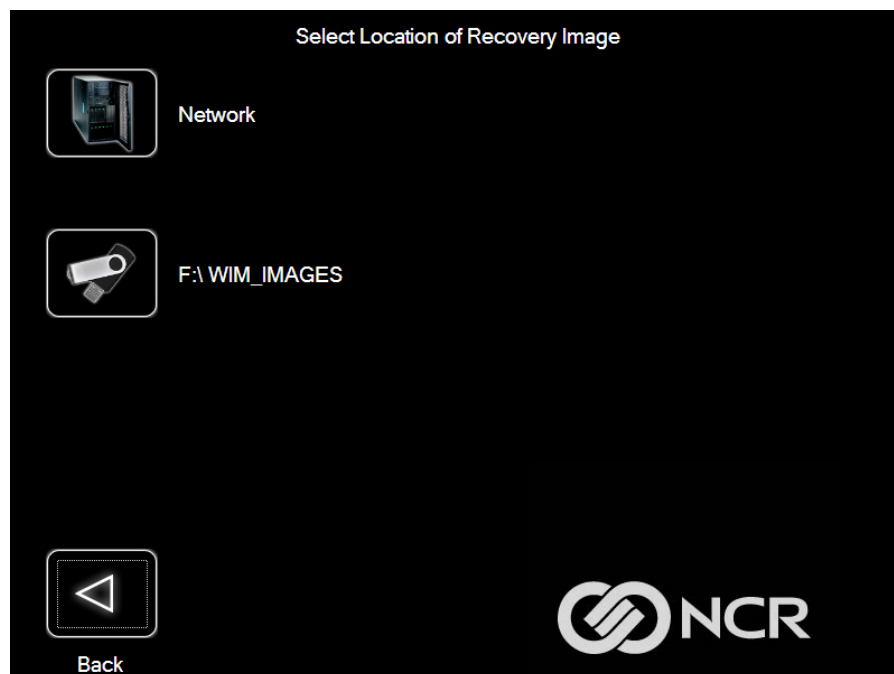
Replace Recovery Image

This feature is used to update the NCR Image Recovery Tool and the environment that it runs in.

1. On the *Change Settings Screen*, select **Replace Recovery Image**.



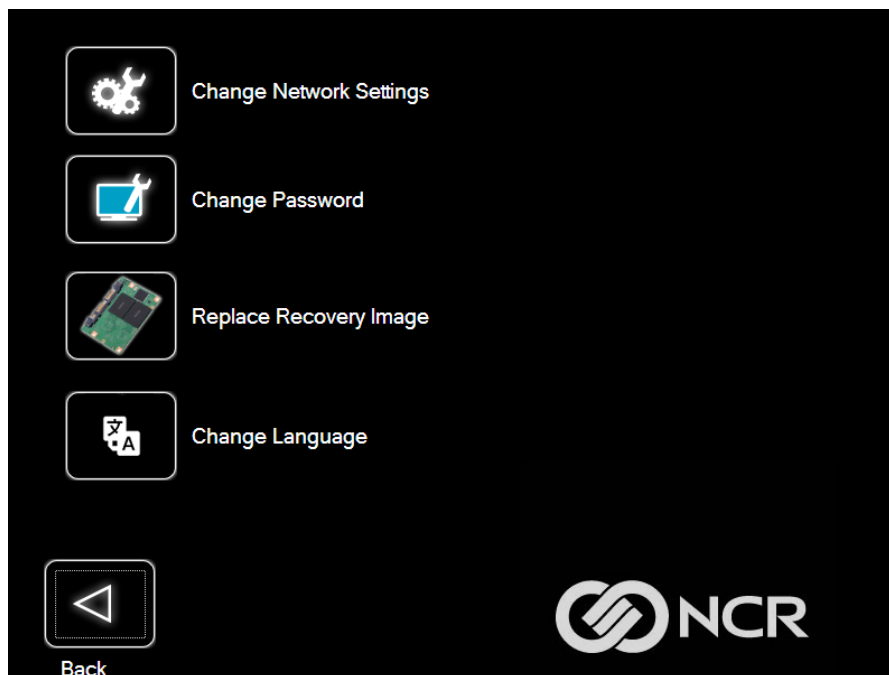
2. Select the source of the *Recovery Image*.



3. Complete the image replacement in the same manner as with the POS *Site/User* image restore procedures.

Change Language

1. On the *Change Settings Screen*, select **Change Language**.



2. Select the language of choice.



Creating a Disk Image

This terminal has a *Image Recovery Button* that permits end users to quickly restore a disk backup from a hidden partition on the NCR system storage. To utilize this valuable feature, the image must be created using the NCR Imaging Suite. The NCR Imaging Suite is available from NCR at:

http://www5.ncr.com/support/support_drivers_patches_radiant.asp?Class=Hospitality/GenDrivers_display

From this site, download the following:

- *ImagingSuite_5.3.0.3.zip* (or later) – The Imaging Suite package consists of three primary parts:
 - A server application for local area network imaging.
 - The NCR Image Recovery Tool, which is a client application that runs on the target or source machine where images will be applied to or captured from.
 - A customized version of Windows PE 3.1 boot OS environment from which the client application will be run.
- *Imaging Suite User Guide* – This document provides a general overview of the Imaging Suite package, how to configure the system to run it, and how to use the applications to capture and apply system images.

Chapter 6: SLES 15 SP4 Software RAID Gold Master Image

The following procedure incorporates software RAID into an NCR supported terminal running SLES 15 SP4 distribution. The software RAID configuration is set to RAID1 mode.



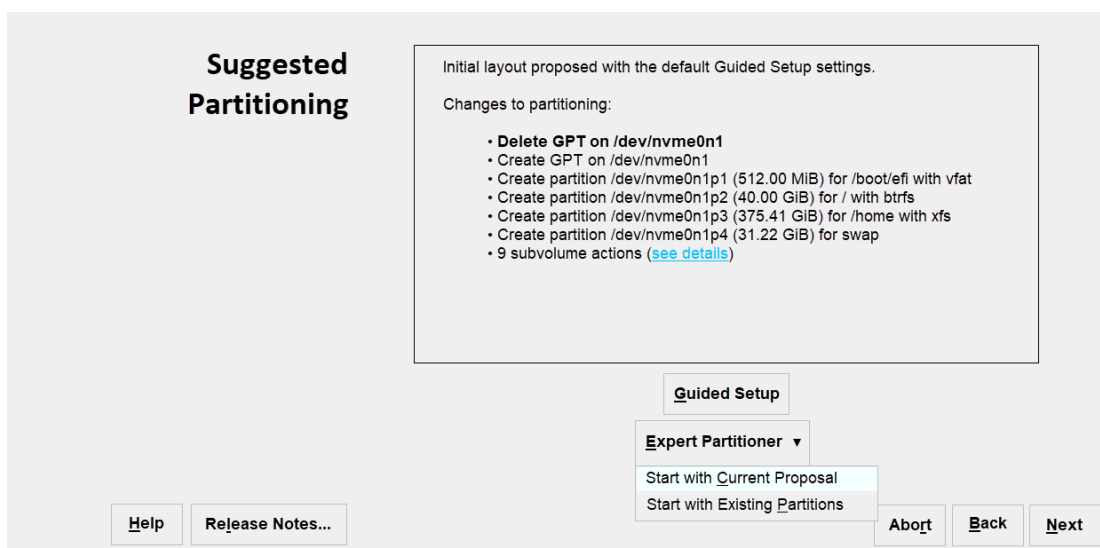
Note: For more information about RAID, refer to [SLES 15 SP4 | Storage Administration Guide | Configuring software RAID for the root partition \(suse.com\)](#).

RAID partitioning is done by using the SLES Expert Partitioner during installation of the OS.

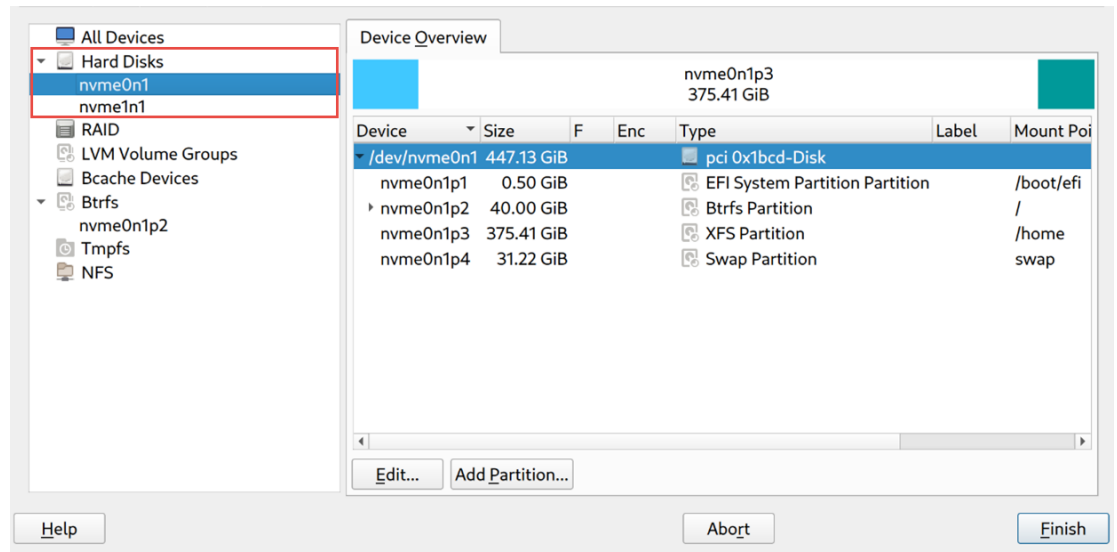


Note: The succeeding screenshots are from an NCR terminal with two 480GB hard disks:

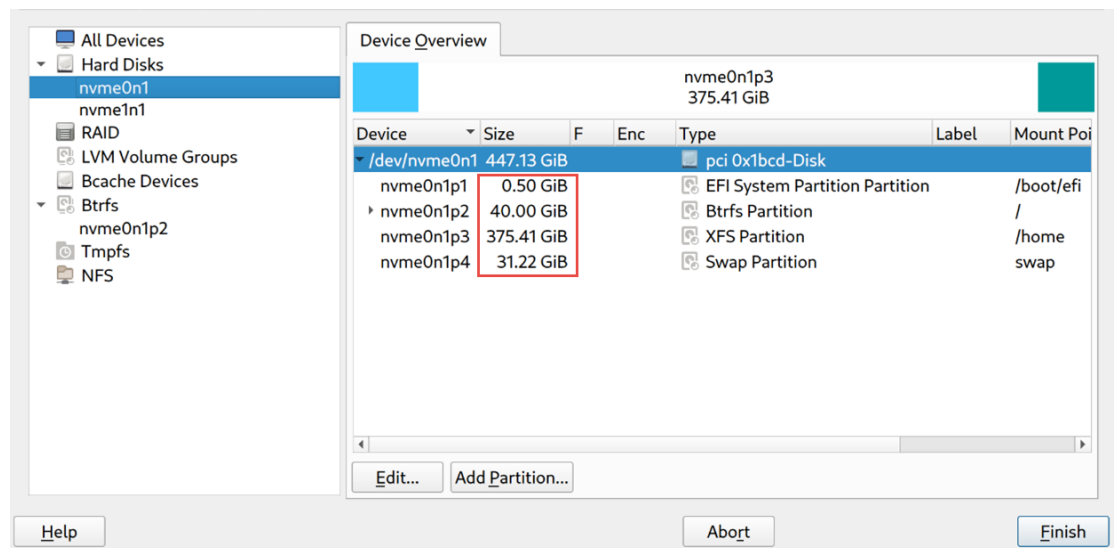
- nvme0n1 — disk 1
 - nvme1n1 — disk 2
1. In the Suggested Partitioning screen, from the Expert Partitioner dropdown list, select **Start with Current Proposal**.



2. Select **Next**. The hard disks present in the system are shown on the left panel.



3. Take note of the recommended partition sizing for disk 1, as this will be followed when creating the RAID partitions for disk 2.



4. Create the following RAID partitions for disk 2:

- /boot/efi
- /
- /home



Note: The Swap Partition can be RAIDed but is optional. In the succeeding steps, Swap Partition will not be RAIDed.

To create the RAID partition, do the following:

- a. From the Hard Disks dropdown list, select the hard disk to partition (nvme1n1).

- b. Select the **Add Partition** button. The Add Partition screen is displayed.

Add Partition on /dev/nvme1n1

New Partition Size

Maximum Size (447.13 GiB)

Custom Size

Size

0.50 GiB

Custom Region

Start Block

2048

End Block

937703054

Help Back Cancel Next

- c. From the New Partition Size options, select **Custom Size** and enter the partition size.
- d. Select **Next**. The Role options are displayed.

Add Partition on /dev/nvme1n1

Role

Operating System

Data and ISV Applications

Swap

EFI Boot Partition

Raw Volume (unformatted)

Help Back Cancel Next

- e. Select **Raw Volume (unformatted)**.

- f. Select **Next**. The Formatting Options and Mounting Options are displayed.

Add Partition on /dev/nvme1n1

Formatting Options

Format device

Filesystem: Ext2

Options...

Do not format device

Partition ID: Linux RAID

Encrypt Device

Mounting Options

Mount device

Mount Point: /srv

Fstab Options...

Do not mount device

Help Back Cancel Next

- g. Do the following:

- From the Formatting Options, select **Do not format device**.
- From the Partition ID dropdown list, select **Linux RAID**.
- From the Mounting Options, select **Do not mount device**.

- h. Select **Next**. In the Device Overview tab, the created partitions, with Linux RAID as its corresponding Type, are displayed.

System Add Device View

All Devices

- Hard Disks
 - nvme0n1
 - nvme1n1**
- RAID
- LVM Volume Groups
- Bcache Devices
- Btrfs
 - nvme0n1p2
- Tmpfs
- NFS

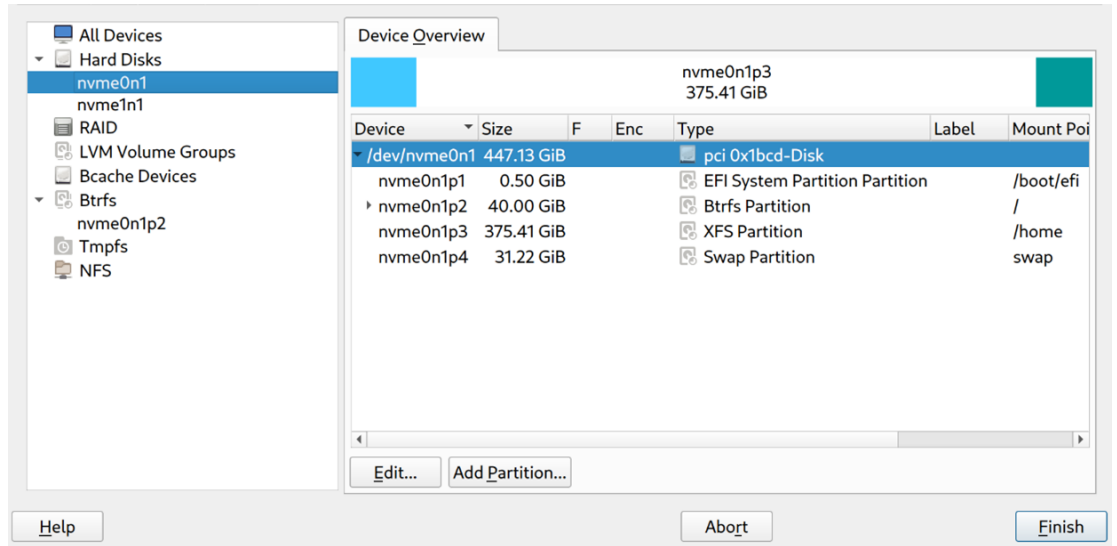
Device Overview

| Device | Size | F | Enc | Type | Label | Mount Point | Start |
|----------------------|------------|---|-----|-----------------|-------|-------------|-------|
| nvme1n1p3 375.41 GiB | | | | | | | |
| /dev/nvme1n1 | 447.13 GiB | | | pci 0x1bcd-Disk | | | |
| nvme1n1p1 | 0.50 GiB | | | Linux RAID | | | 2 |
| nvme1n1p2 | 40.00 GiB | | | Linux RAID | | | 1050 |
| nvme1n1p3 | 375.41 GiB | | | Linux RAID | | | 84936 |

Edit... Add Partition... Delete

Help Abort Next

5. On the left panel, from the Hard Disks dropdown list, select disk 1 (nvme0n1). In the Device Overview tab, the partitions for the selected disk are displayed.



Note: The partitions are named using the [disk name]+p+[partition number].

| Hard Disk | Partitions |
|-----------|------------|
| nvme0n1 | nvme0n1p1 |
| | nvme0n1p2 |
| | nvme0n1p3 |
| | nvme0n1p4 |

6. Edit the first partition of disk 1.
 - a. From the Device Overview tab, select the first partition (nvme0n1p1).

- b. Select the **Edit** button. The Edit Partition screen is displayed.

Edit Partition /dev/nvme0n1p1

Formatting Options

Format device

Filesystem: FAT

Options...

Do not format device

Partition ID: Linux

Encrypt Device

Mounting Options

Mount device

Mount Point: /boot/efi

Fstab Options...

Do not mount device

Help Back Cancel Next

- c. Do the following:
- From the Formatting Options, select **Do not format device**.
 - From the Partition ID dropdown list, select **Linux**.
 - From the Mounting Options, select **Do not mount device**.
- d. Select **Next**. For nvme0n1p1, the Mount Point is now blank.

System Add Device View

All Devices

- Hard Disks
- nvme0n1**
- nvme1n1
- RAID
- LVM Volume Groups
- Bcache Devices
- Btrfs
- nvme0n1p2
- Tmpfs
- NFS

Device Overview

| Device | Size | F | Enc | Type | Label | Mount Point | Start |
|---|-----------------|---|-----|----------------------|-------|-------------|-------|
| nvme0n1p3 375.41 GiB | | | | | | | |
| /dev/nvme0n1 447.13 GiB pci 0x1bcd-Disk | | | | | | | |
| nvme0n1p1 | 0.50 GiB | | | FAT Partition | | | |
| nvme0n1p2 | 40.00 GiB | | | Btrfs Partition | / | | 105 |
| nvme0n1p3 | 375.41 GiB | | | XFS Partition | /home | | 8493 |
| nvme0n1p4 | 31.22 GiB | | | Swap Partition | swap | | 87223 |

Edit... Add Partition... Delete

Help Abort Next

7. Edit the second partition of disk 1.
- a. From the Device Overview tab, select the second partition (nvme0n1p2).

- b. Select the **Edit** button. The Edit Partition screen is displayed.

Edit Partition /dev/nvme0n1p2

Formatting Options

- Format device
 - Filesystem: **Btrfs**
 - Options...
- Do not format device

Partition ID: **Linux**

Encrypt Device

Mounting Options

- Mount device
 - Mount Point: /
 - Fstab Options...
- Do not mount device

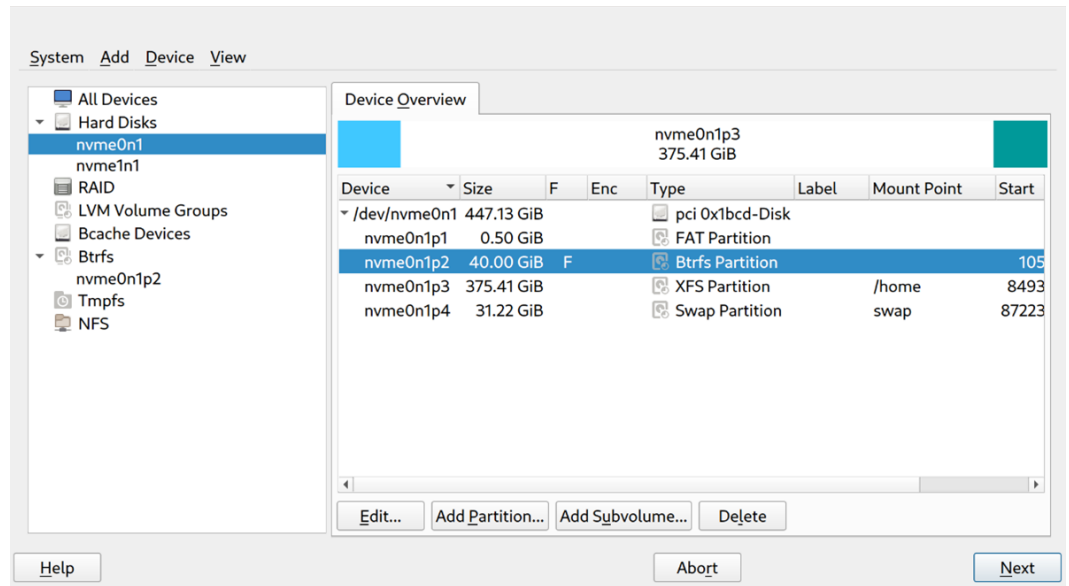
Buttons: **Help**, **Back**, **Cancel**, **Next**

- c. Do the following:
- From the Formatting Options, select **Format device**.
 - From the Filesystem dropdown list, select **Btrfs**.
 - From the Partition ID dropdown list, select **Linux**.
 - From the Mounting Options, select **Do not mount device**.
- d. Select **Next**. A popup window is displayed.

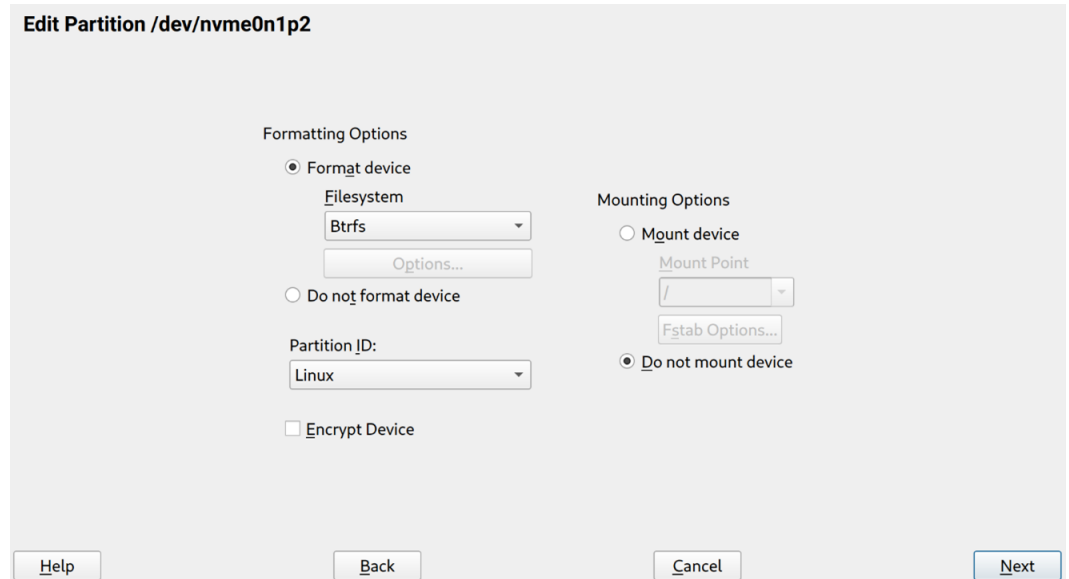
You have changed the mount point of the device.
Do you want to delete the current subvolumes?

Buttons: **Yes**, **No**

- e. Select **Yes**. For nvme0n1p2, the Mount Point is now blank.

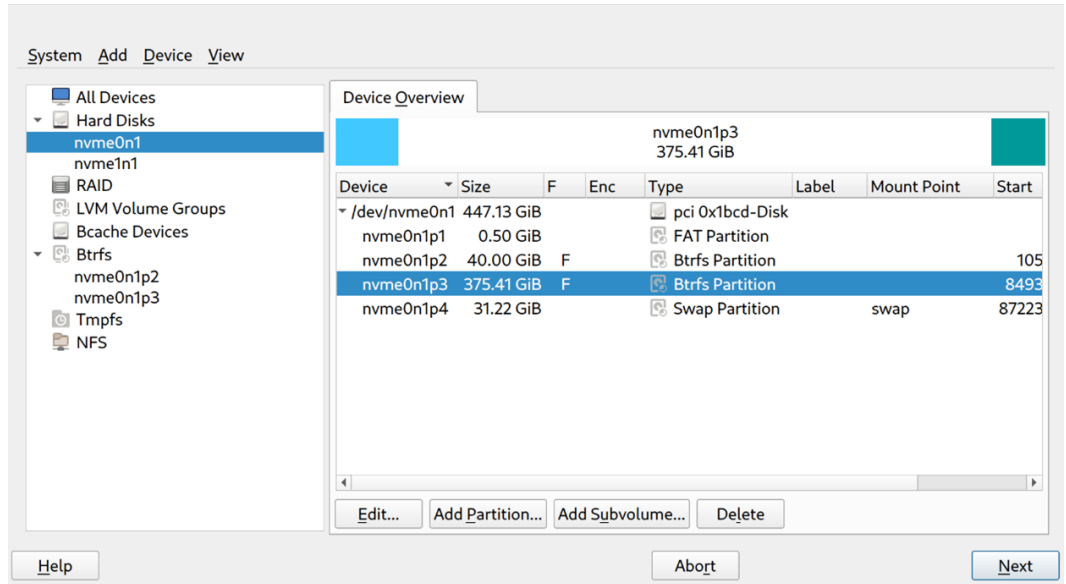


8. Edit the third partition of disk 1.
- From the Device Overview tab, select the third partition (nvme0n1p3).
 - Select the **Edit** button. The Edit Partition screen is displayed.

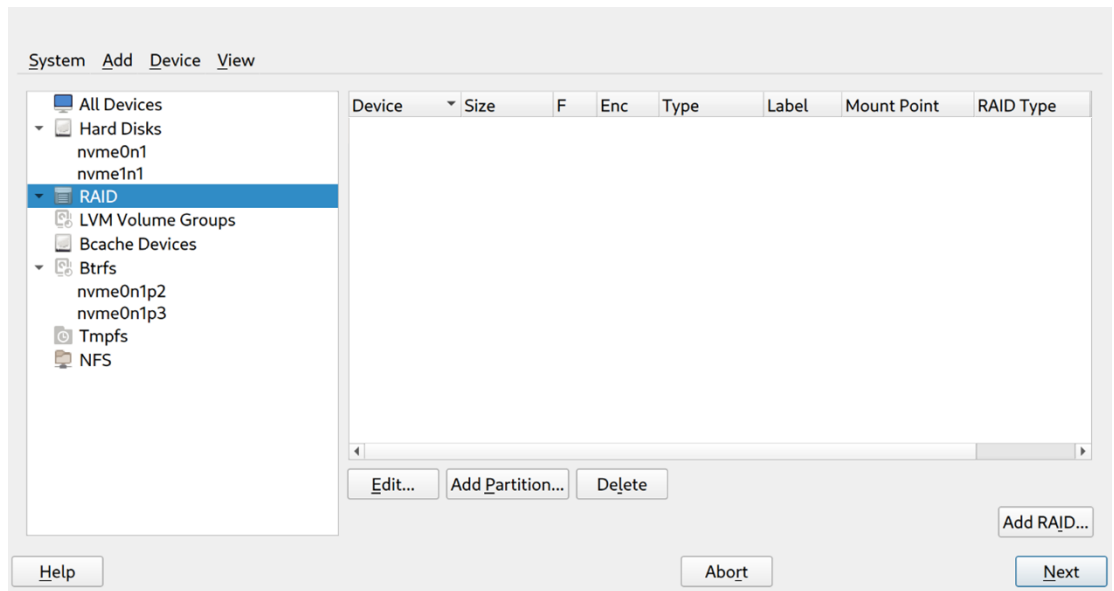


- c. Do the following:
- From the Formatting Options, select **Format device**.
 - From the Filesystem dropdown list, select **Btrfs**.
 - From the Partition ID dropdown list, select **Linux**.
 - From the Mounting Options, select **Do not mount device**.

- d. Select **Next**. For nvme0n1p3, the Type is now Btrfs Partition and the Mount Point is now blank.



- 9. On the left panel, select **RAID**. The right panel displays the RAIDed partitions, if any.



10. Select the **Add RAID** button. The Add RAID screen is displayed.

Add RAID /dev/md0

RAID Type: RAID 0 (Striping) RAID 1 (Mirroring) RAID 5 (Redundant Striping) RAID 6 (Dual Redundant Striping) RAID 10 (Mirroring and Striping)

Raid Name (optional):

Available Devices:

| Device | Size | Enc Type |
|----------------|------------|-----------------|
| /dev/nvme0n1p2 | 40.00 GiB | Btrfs Partition |
| /dev/nvme0n1p3 | 375.41 GiB | Btrfs Partition |
| /dev/nvme1n1p2 | 40.00 GiB | Linux RAID |
| /dev/nvme1n1p3 | 375.41 GiB | Linux RAID |

Selected Devices:

| Device | Size | Enc Type |
|----------------|----------|--------------|
| /dev/nvme0n1p1 | 0.50 GiB | Part of boot |
| /dev/nvme1n1p1 | 0.50 GiB | Part of boot |

Total size: 0.81 TiB Resulting size: 502.51 MiB

Buttons: Help, Back, Cancel, Next, Add →, Add All →, ← Remove, ← Remove All, Top, Up, Down, Bottom

11. Do the following:

- From the RAID Type options, select **RAID 1 (Mirroring)**.
- In the Raid Name field, enter a preferred name. For example, *boot*.
- From the Available Devices list, select the first partition of disk 1 (nvme0n1p1) and the first partition of disk 2 (nvme1n1p1), then select **Add**. In the Selected Devices list, nvme0n1p1 and nvme1n1p1 are displayed.

12. Select **Next**. The Chunk Size dropdown list is displayed.

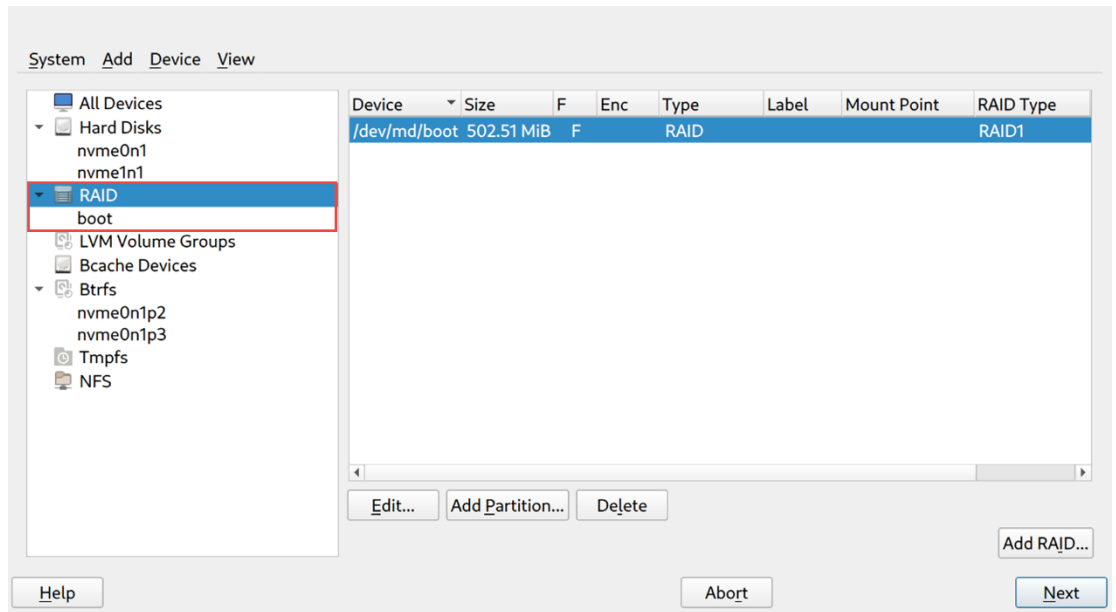
Add RAID /dev/md/boot

Chunk Size:

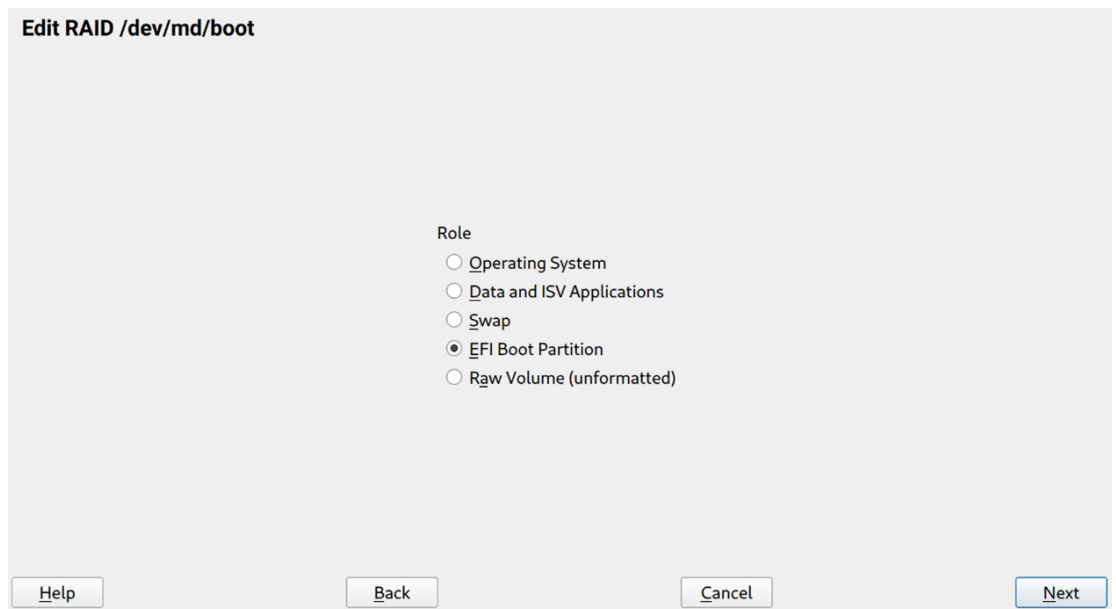
Buttons: Help, Back, Cancel, Next

13. From the Chunk Size dropdown list, select the preferred size.

14. Select **Next**. On the left panel, from the RAID dropdown list, the newly added RAID (boot) is displayed.

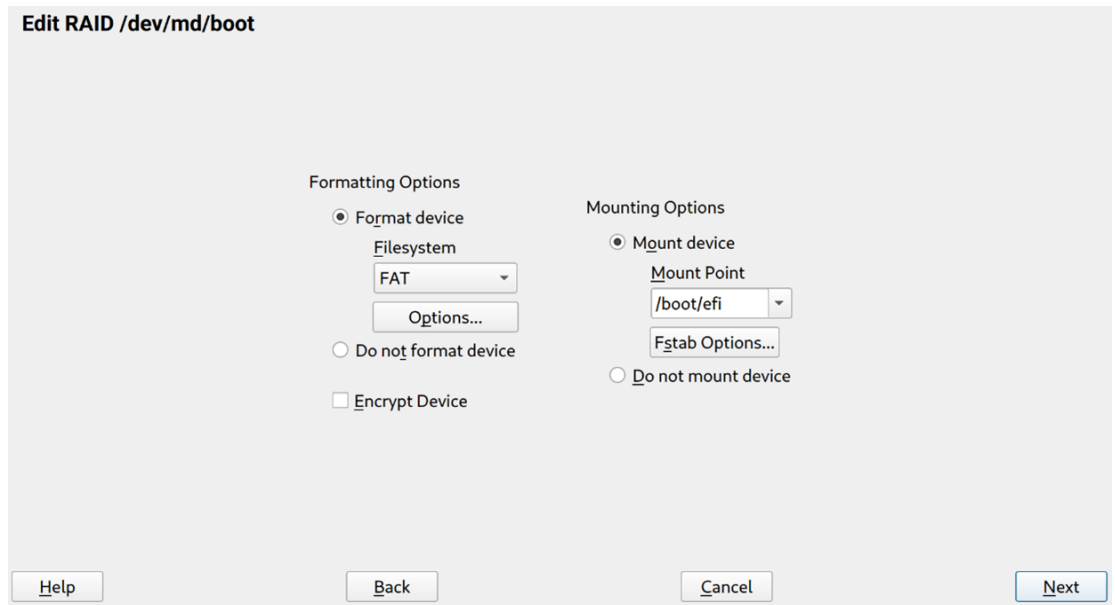


15. On the right panel, select the newly added RAID device (/dev/md/boot).
16. Select the **Edit** button. The Edit RAID screen is displayed.



17. From the Role options, select **EFI Boot Partition**.

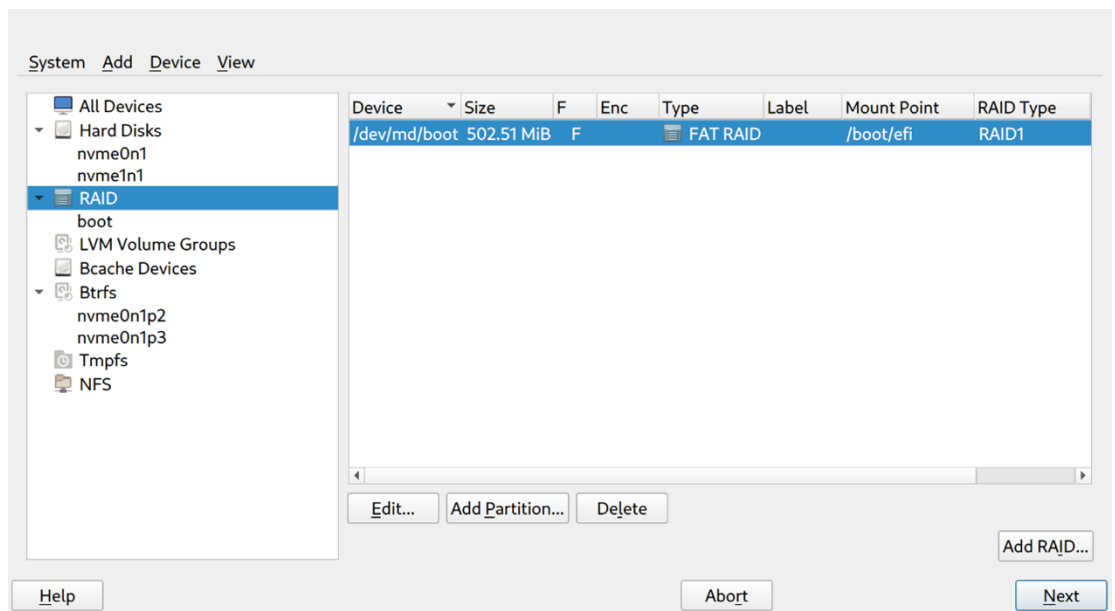
18. Select **Next**. The Formatting Options and Mounting Options are displayed.



19. Do the following:

- From the Formatting Options, select **Format device**.
- From the Filesystem dropdown list, select **FAT**.
- From the Mounting Options, select **Mount device**.
- From the Mount Point dropdown list, select **/boot/efi**.

20. Select **Next**. For /dev/md/boot, the Mount Point is now /boot/efi.



21. Select the **Add RAID** button. The Add RAID screen is displayed.

Add RAID /dev/md0

RAID Type

RAID 0 (Striping)
 RAID 1 (Mirroring)
 RAID 5 (Redundant Striping)
 RAID 6 (Dual Redundant Striping)
 RAID 10 (Mirroring and Striping)

Raid Name (optional)

Available Devices:

| Device | Size | Enc Type |
|----------------|------------|-----------------|
| /dev/nvme0n1p3 | 375.41 GiB | Btrfs Partition |
| /dev/nvme1n1p3 | 375.41 GiB | Linux RAID |

Selected Devices:

| Device | Size | Enc Type |
|----------------|-----------|--------------|
| /dev/nvme0n1p2 | 40.00 GiB | Part of root |
| /dev/nvme1n1p2 | 40.00 GiB | Part of root |

Total size: 0.73 TiB

Resulting size: 39.84 GiB

22. Do the following:

- From the RAID Type options, select **RAID 1 (Mirroring)**.
- In the Raid Name field, enter a preferred name. For example, *root*.
- From the Available Devices list, select the second partition of disk 1 (nvme0n1p2) and the second partition of disk 2 (nvme1n1p2), then select **Add**. In the Selected Devices list, nvme0n1p2 and nvme1n1p2 are displayed .

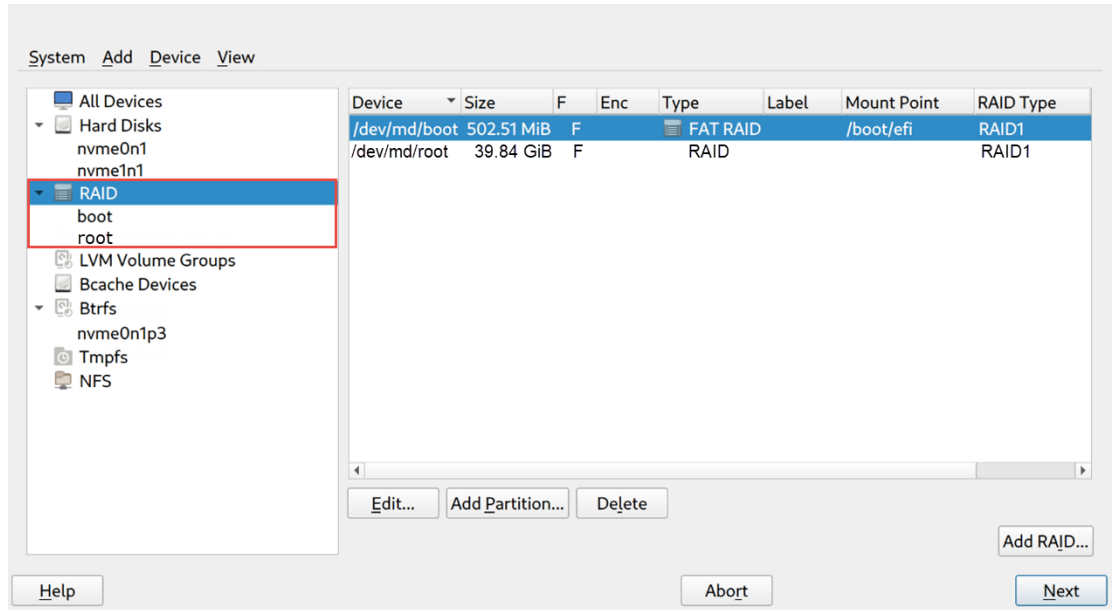
23. Select **Next**. The Chunk Size dropdown list is displayed.

Add RAID /dev/md/root

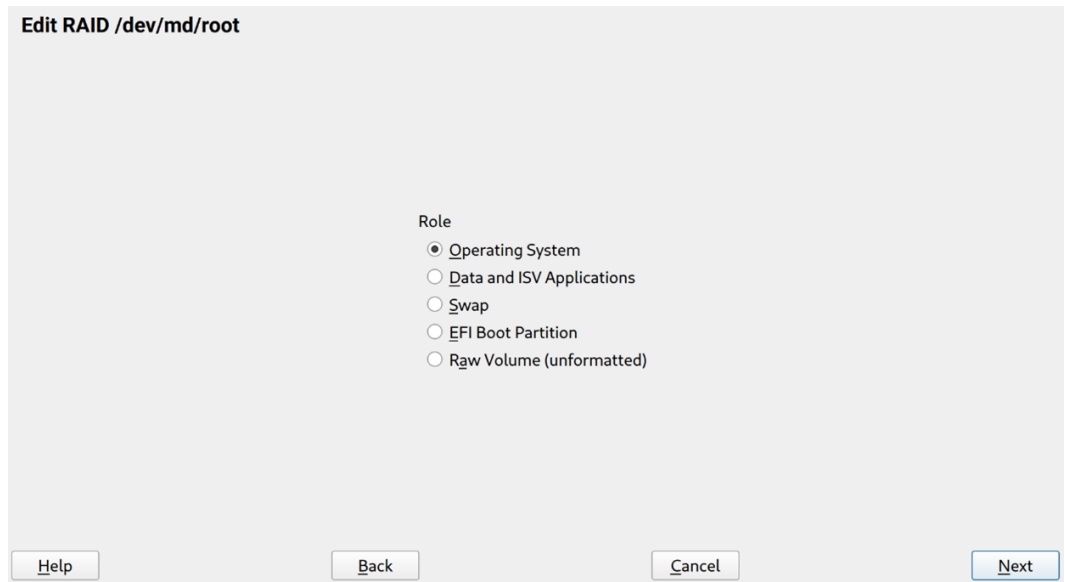
Chunk Size

24. From the Chunk Size dropdown list, select the preferred size.

25. Select **Next**. On the left panel, from the RAID dropdown list, the newly added RAID (root) is displayed.

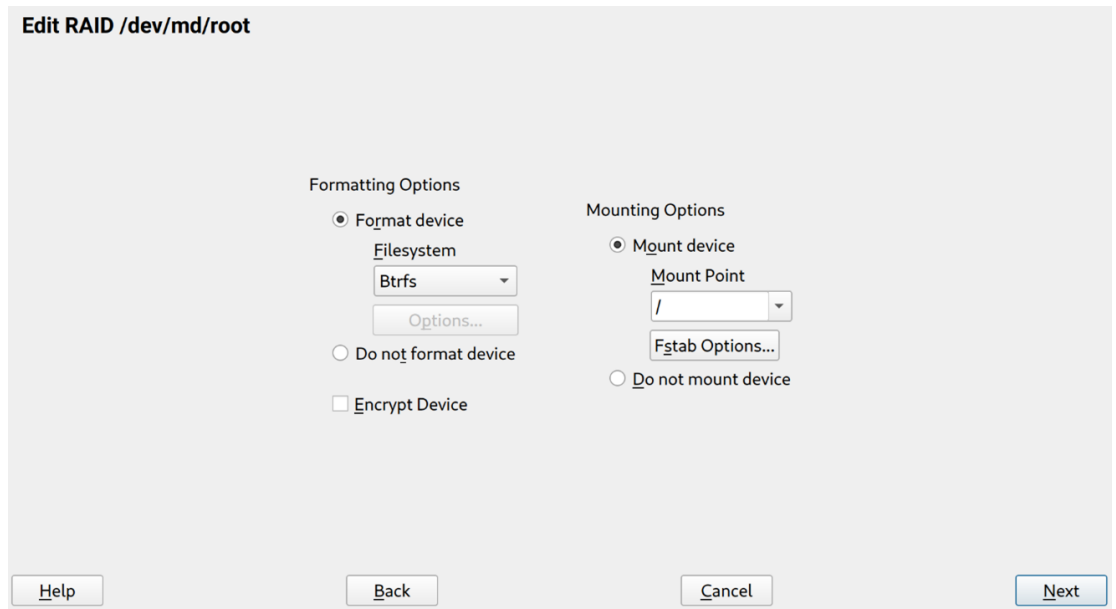


26. On the right panel, select the newly added RAID device (/dev/md/root).
27. Select the **Edit** button. The Edit RAID screen is displayed.



28. From the Role options, select **Operating System**.

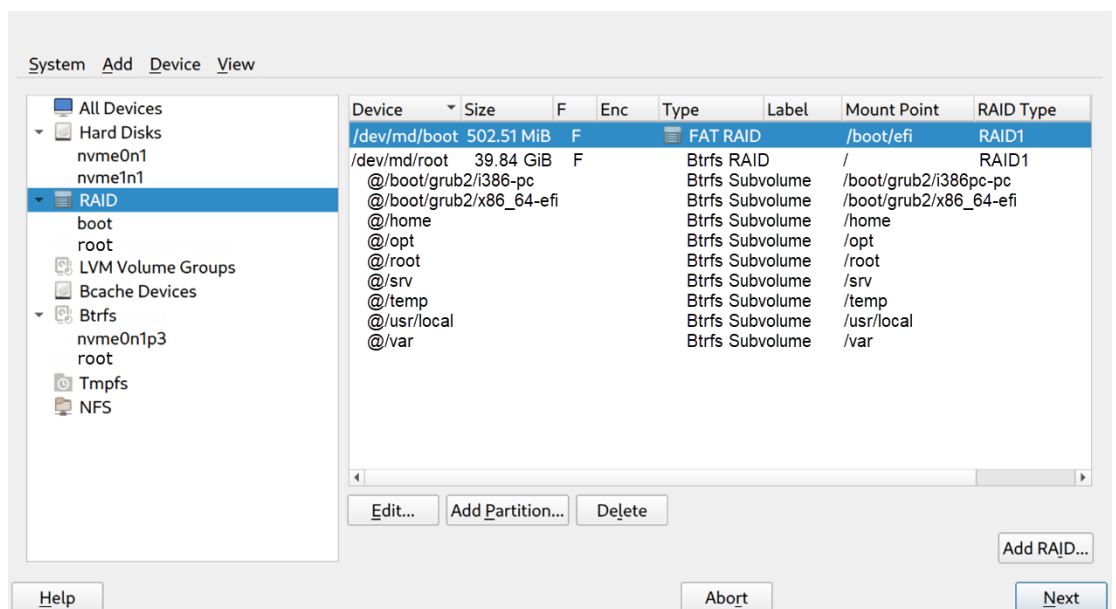
29. Select **Next**. The Formatting Options and Mounting Options are displayed.



30. Do the following:

- From the Formatting Options, select **Format device**.
- From the Filesystem dropdown list, select **Btrfs**
- From the Mounting Options, select **Mount device**.
- From the Mount Point dropdown list, select **/**.

31. Select **Next**. For /dev/md/root, the Mount Point is now /. Subvolumes for /dev/md/root are also displayed.



32. Select the **Add RAID** button. The Add RAID screen is displayed.

Add RAID /dev/md0

RAID Type

Raid Name (optional):

RAID 0 (Striping)
 RAID 1 (Mirroring)
 RAID 5 (Redundant Striping)
 RAID 6 (Dual Redundant Striping)
 RAID 10 (Mirroring and Striping)

Available Devices:

| Device | Size | Enc | Type |
|--------|------|-----|------|
| | | | |

Selected Devices:

| Device | Size | Enc | Type |
|----------------|------------|--------------|------|
| /dev/nvme0n1p3 | 375.41 GiB | Part of home | |
| /dev/nvme1n1p3 | 375.41 GiB | Part of home | |

Total size: 0.00 B Resulting size: 374.92 GiB

Buttons: Add →, Add All →, ← Remove, ← Remove All, Top, Up, Down, Bottom, Help, Back, Cancel, Next

33. Do the following:

- From the RAID Type options, select **RAID 1 (Mirroring)**.
- In the Raid Name field, enter a preferred name. For example, *home*.
- From the Available Devices list, select the third partition of disk 1 (nvme0n1p3) and the third partition of disk 2 (nvme1n1p3), then select **Add**. In the Selected Devices list, nvme0n1p3 and nvme1n1p3 are displayed .

34. Select **Next**. The Chunk Size dropdown list is displayed.

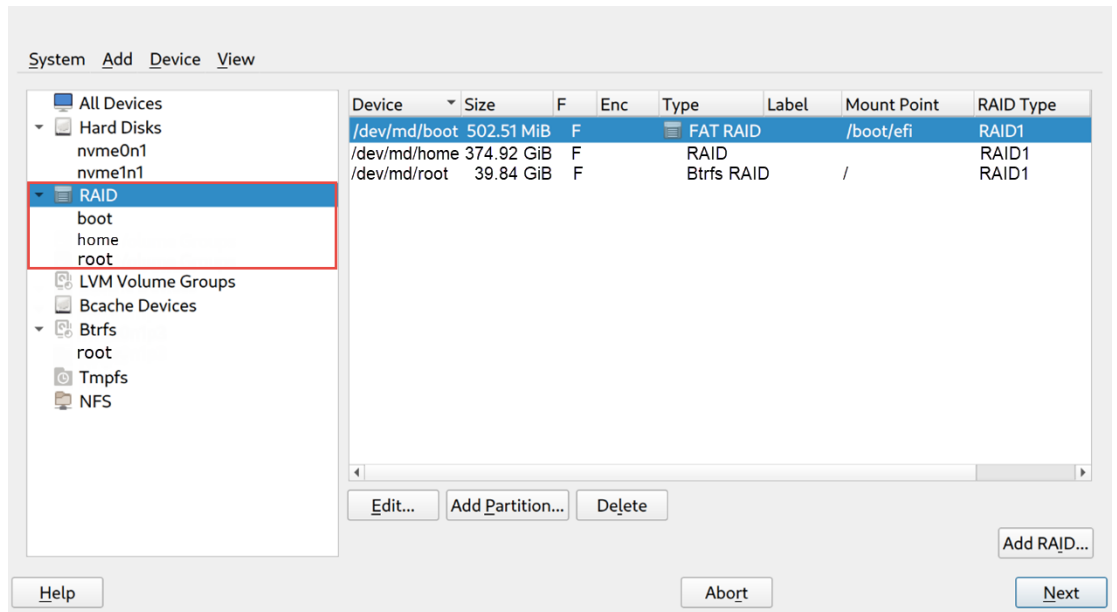
Add RAID /dev/md/home

Chunk Size

Buttons: Help, Back, Cancel, Next

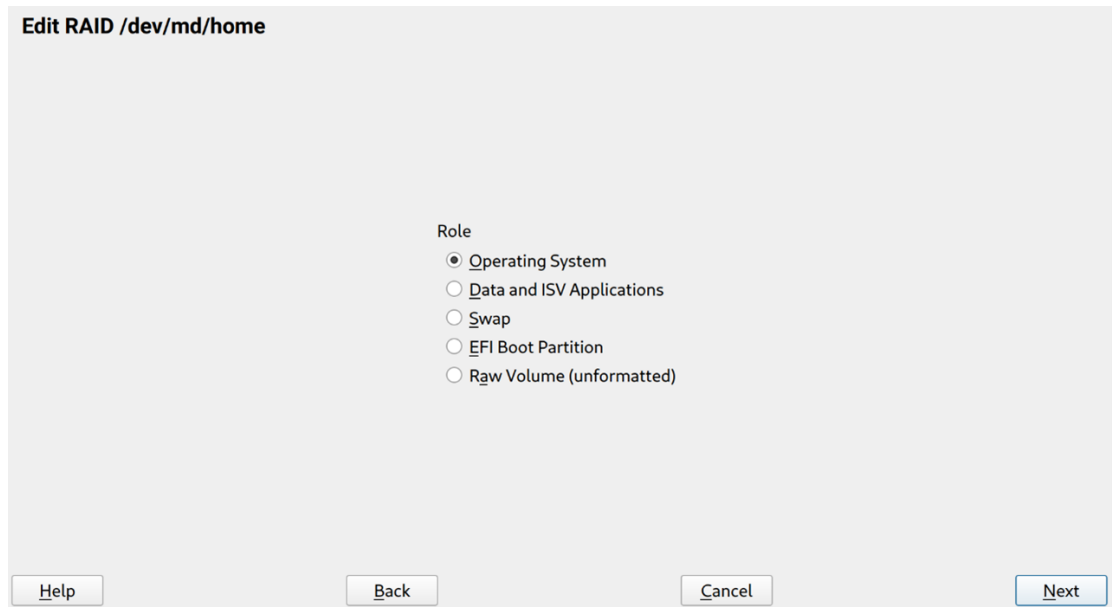
35. From the Chunk Size dropdown list, select the preferred size.

36. Select **Next**. On the left panel, from the RAID dropdown list, the newly added RAID (home) is displayed.



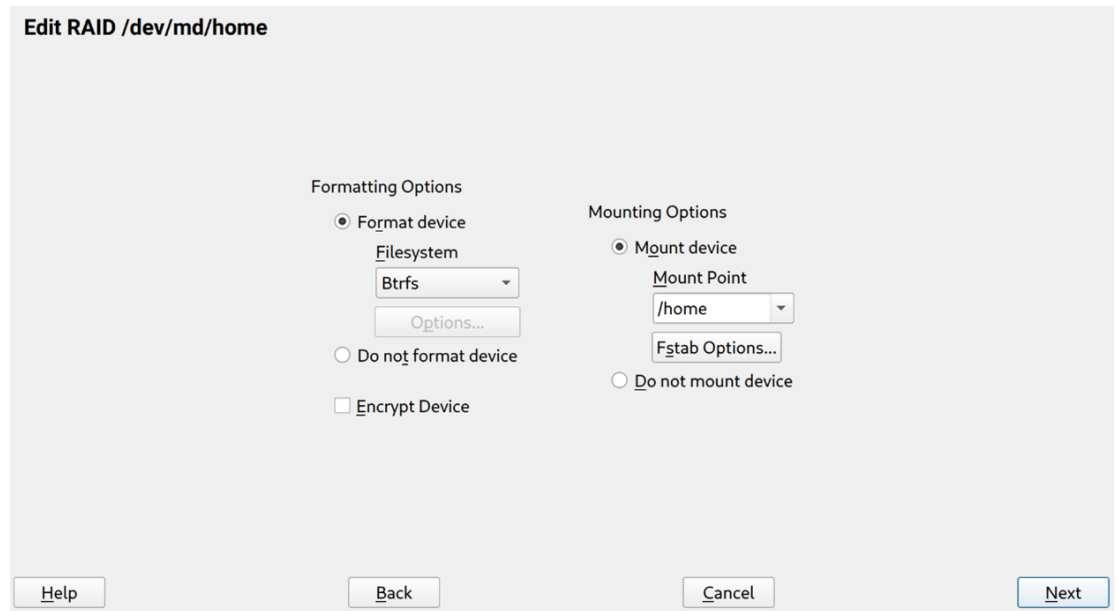
37. On the right panel, select the newly added RAID device (/dev/md/home).

38. Select the **Edit** button. The Edit RAID screen is displayed.



39. From the Role options, select **Operating System**.

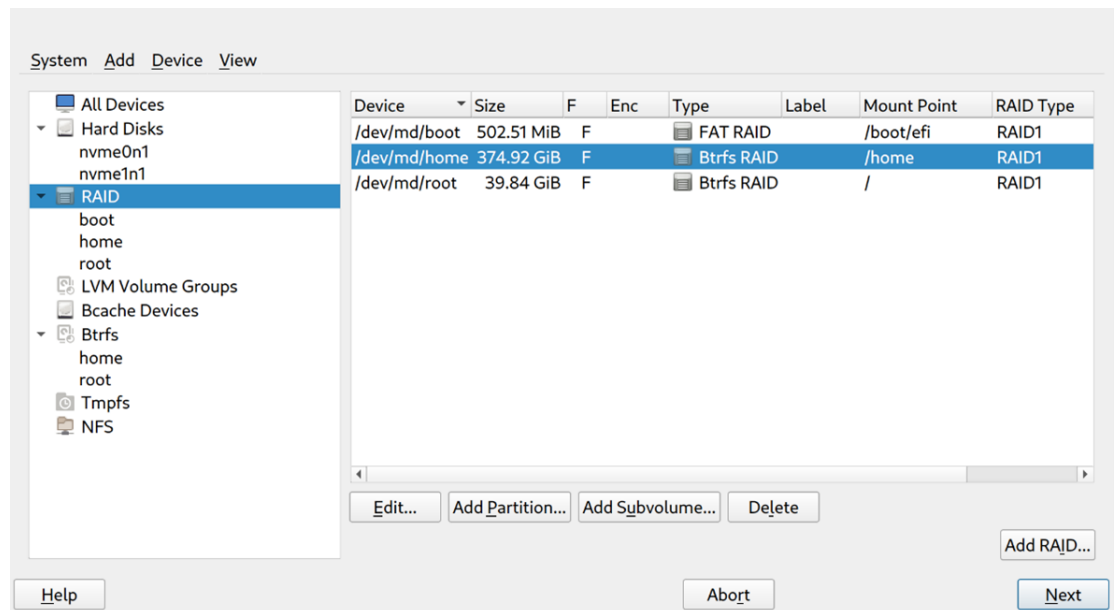
40. Select **Next**. The Formatting Options and Mounting Options are displayed.



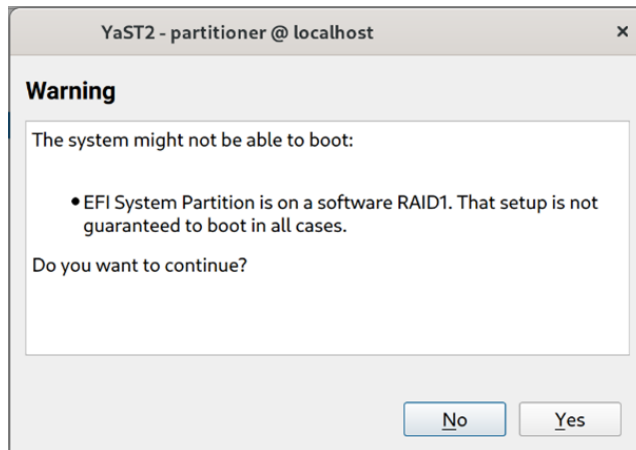
41. Do the following:

- From the Formatting Options, select **Format device**.
- From the Filesystem dropdown list, select **Btrfs**.
- From the Mounting Options, select **Mount device**.
- From the Mount Point dropdown list, select **/home**.

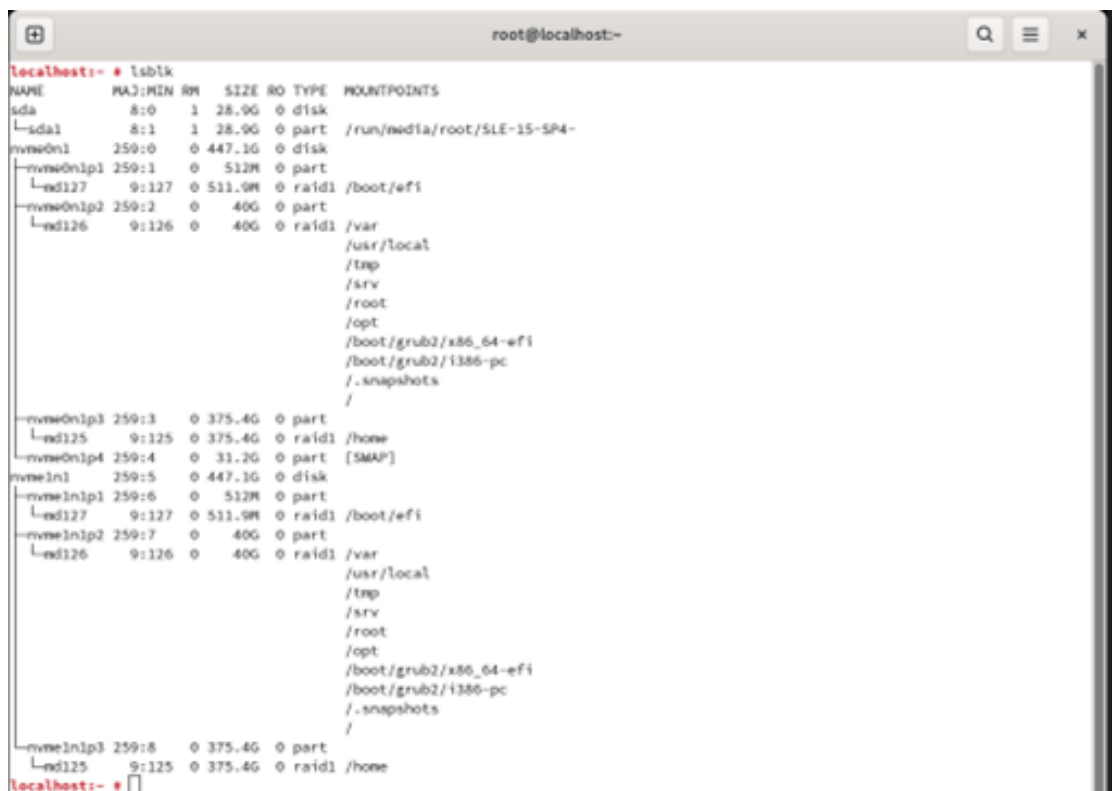
42. Select **Next**. For /dev/md/home, the Mount Point is now /home.



43. Select **Next**. A popup window is displayed.



44. Select **Yes**, and review the Suggested Partitioning, then continue with the installation of the OS.



The image shows a terminal window titled "root@localhost:-" displaying the output of the command "lsblk". The output is a tree-like structure showing disk partitions and their mount points.

```
root@localhost:- # lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE  MOUNTPOINTS
sda         8:0    1  28.0G  0 disk
└─sda1      8:1    1  28.0G  0 part  /run/medias/root/SLE-15-SP4-
nvme0n1    259:0  0  447.1G  0 disk
├─nvme0n1p1 259:1  0   512M  0 part
├─┬─rd127    9:127  0  511.9M  0 raid1 /boot/efi
├─┬─nvme0n1p2 259:2  0   40G   0 part
├─┬─┬─rd126    9:126  0   40G   0 raid1 /var
├─├─├─├─├─├─ /usr/local
├─├─├─├─├─├─ /tmp
├─├─├─├─├─├─ /srv
├─├─├─├─├─├─ /root
├─├─├─├─├─├─ /opt
├─├─├─├─├─├─ /boot/grub2/x86_64-efi
├─├─├─├─├─├─ /boot/grub2/i386-pc
├─├─├─├─├─├─ /.snapshots
├─├─├─├─├─├─ /
├─├─├─├─├─├─ nvme0n1p3 259:3  0  375.4G  0 part
├─├─├─├─├─├─┬─rd125    9:125  0  375.4G  0 raid1 /home
├─├─├─├─├─├─├─nvme0n1p4 259:4  0   31.2G  0 part  [SWAP]
├─├─├─├─├─├─nvme1n1    259:5  0  447.1G  0 disk
├─├─├─├─├─├─┬─nvme1n1p1 259:6  0   512M  0 part
├─├─├─├─├─├─├─┬─rd127    9:127  0  511.9M  0 raid1 /boot/efi
├─├─├─├─├─├─├─┬─nvme1n1p2 259:7  0   40G   0 part
├─├─├─├─├─├─├─├─┬─rd126    9:126  0   40G   0 raid1 /var
├─├─├─├─├─├─├─├─├─├─├─ /usr/local
├─├─├─├─├─├─├─├─├─├─├─ /tmp
├─├─├─├─├─├─├─├─├─├─├─ /srv
├─├─├─├─├─├─├─├─├─├─├─ /root
├─├─├─├─├─├─├─├─├─├─├─ /opt
├─├─├─├─├─├─├─├─├─├─├─ /boot/grub2/x86_64-efi
├─├─├─├─├─├─├─├─├─├─├─ /boot/grub2/i386-pc
├─├─├─├─├─├─├─├─├─├─├─ /.snapshots
├─├─├─├─├─├─├─├─├─├─├─ /
├─├─├─├─├─├─├─├─├─├─├─ nvme1n1p3 259:8  0  375.4G  0 part
├─├─├─├─├─├─├─├─├─├─├─┬─rd125    9:125  0  375.4G  0 raid1 /home
root@localhost:- #
```

```
root@localhost:~# df -HT
Filesystem      Type      Size  Used Avail Use% Mounted on
devtmpfs        devtmpfs  4.8M  8.8K  4.8M   1% /dev
tmpfs           tmpfs     16G   8      16G   0% /dev/shm
tmpfs           tmpfs     6.2G  18M   6.2G   1% /run
tmpfs           tmpfs     4.8M   8      4.8M   0% /sys/fs/cgroup
/dev/md126      btrfs    48G   3.7G  37G  10% /
/dev/md126      btrfs    48G   3.7G  37G  10% /.snapshots
/dev/md126      btrfs    48G   3.7G  37G  10% /boot/grub2/1386-pc
/dev/md126      btrfs    48G   3.7G  37G  10% /boot/grub2/x86_64-efi
/dev/md126      btrfs    48G   3.7G  37G  10% /opt
/dev/md126      btrfs    48G   3.7G  37G  10% /root
/dev/md126      btrfs    48G   3.7G  37G  10% /srv
/dev/md126      btrfs    48G   3.7G  37G  10% /tmp
/dev/md126      btrfs    48G   3.7G  37G  10% /usr/local
/dev/md126      btrfs    48G   3.7G  37G  10% /var
/dev/md127      vfat     512M  5.1M  507M   1% /boot/efi
/dev/md125      btrfs    376G  3.4M  376G   1% /home
tmpfs           tmpfs     3.1G  56K   3.1G   1% /run/user/0
/dev/sda1       vfat     29G   14G   16G  48% /run/media/root/SLE-15-SP4-
```

Chapter 7: Power Management

The BIOS supports the Advanced Configuration and Power Management Interface (ACPI) 3.0 specification. A key feature of ACPI is that the operating system, not the BIOS, configures and implements power management. The CX5 terminal supports the Global system power states defined by ACPI.

Computer States

G3 Mechanical Off

A computer state that is entered and left by a mechanical means

Example: Turning off the system's power through the movement of a large red switch.

Various government agencies and countries require this operating mode. It is implied by the entry of this off state through a mechanical means that no electrical current is running through the circuitry and that it can be worked on without damaging the hardware or endangering service personnel. The OS must be restarted to return to the Working state. No hardware context is retained. Except for the real-time clock, power consumption is zero.

G2/S5 Soft Off

A computer state where the computer consumes a minimal amount of power. No user mode or system mode code is run. This state requires a large latency in order to return to the Working state. The system's context will not be preserved by the hardware. The system must be restarted to return to the Working state. It is not safe to disassemble the machine in this state.

G1 Sleeping

A computer state where the computer consumes a small amount of power, user mode threads are not being executed, and the system appears to be off (from an end user's perspective, the display is off, and so on). Latency for returning to the Working state varies on the wake environment selected prior to entry of this state (for example, whether the system should answer phone calls). Work can be resumed without rebooting the OS because large elements of system context are saved by the hardware and the rest by system software. It is not safe to disassemble the machine in this state.

Go Working

A computer state where the system dispatches user mode (application) threads and they execute. In this state, peripheral devices (peripherals) are having their power state changed dynamically. The user can select, through some UI, various performance/power characteristics of the system to have the software optimize for performance or battery life. The system responds to external events in real time. It is not safe to disassemble the machine in this state.

ACPI Sleep States (S0 - S5)

Under the G1 sleeping state ACPI defines levels of system sleep state support. The CX5 supports the following sleeping states:

- S0: Normal Powered-On state
- S1 (Standby): The S1 sleeping state is a low wake latency sleeping state. In this state, no system context is lost (CPU or chip set) and hardware maintains all system contexts.



Note: The CX5 does not support S1 state. Turning off the backlight and hard drives provides the equivalent power savings (due to Intel's processor C-states feature) at nearly zero latency.

- S2: Not supported
- S3 (Suspend to Ram): The S3 sleeping state is a low wake latency sleeping state. This state is similar to the S1 sleeping state except that the CPU and system cache context is lost (the OS is responsible for maintaining the caches and CPU context). Control starts from the processor's reset vector after the wake event. In NCR systems, during S3, power is only provided to the USB 3.0 ports.



Note: When the terminal resumes from an S3 state, all the USB devices re-enumerate. This causes speaker tones as if they were disconnected and then reconnected. This does not present a problem and the USB devices will continue to operate correctly.

Requirements for S3 support:

- O/S must be built on a system with S3 enabled in the BIOS
- Some peripherals may not be S3 capable, which can prevent the system from entering S3 state.
- S4 (Suspend to Disk): The S4 state is the lowest power, longest wake latency sleeping state supported by ACPI. In order to reduce power to a minimum, it is assumed that the hardware platform has powered off all devices. Platform context is maintained.

Requirements for S4 support:

- O/S must be built on a system with S3 enabled in the BIOS

- Some peripherals may not be S4 capable, which can prevent the system from entering S4 state.

Reference the *ACPI Specification* for details.

Peripherals: ACPI defines power states for peripherals which are separate from the system power state. The device power states range from D0 (fully-on) to D3 (off) It is the responsibility of the driver developer for each peripheral to define and support the available power states.

| Power State | S0 Working | S0 Idle, Backlight Off, SSD Idle | S3 Suspend to RAM | S4 Hibernate | S5 Soft Off |
|---------------------------------|--------------------|----------------------------------|--|---|---|
| Supported: Y/N | Y | Y | Y | Y | Y |
| Description | Fully Functional** | Video Backlight Off, SSD Idle | Video Backlight Off, SSD Idle, Cache Flush, Memory in Slow Refresh, CPU Halted | Video Backlight Off, SSD Off, Cache Flush, Memory data to SSD, CPU Halted | OFF Some devices remain powered by standby voltage (LAN, ME-AMT, USB) to allow wake-up |
| Power Supply Status | On | On | Powered Down* | Powered Down* | Powered Down* |
| Power Consumption | | | | | |
| Intel Celeron J3455 | 31.1W | 22.5W | 2.6W | 2.4W | 2.3W |
| Wake Options | | | | | |
| Power Switch | N/A | Y | Y | Y | Y |
| Touch | N/A | Y | Y | Y | Y |
| USB Keyboard[†] | N/A | Y | Y | Y | Y |

| | | | | | |
|------------------------------|-----|---|---|---|---|
| USB Mouse[†] | N/A | Y | Y | Y | Y |
| LAN (magic packet) | N/A | Y | Y | Y | Y |
| RTC Alarm | N/A | Y | Y | Y | Y |

Note: Power consumption based on the following configuration: 4GB RAM x2, 240 GB SSD x1

*Maintains small voltage to support wake circuits.

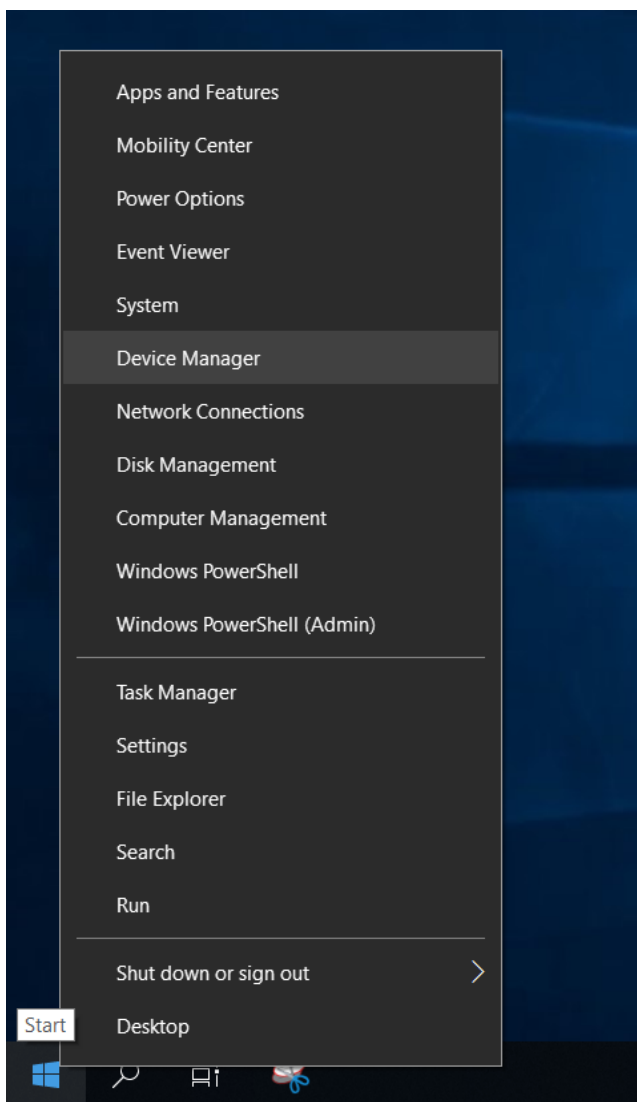
**Passmark Burn in test. This represents a maximum use case. Actual customer usage will differ.

†USB 3.0 port. The USB 2.0 +12V and +24V ports do not maintain power and can't wake the unit.

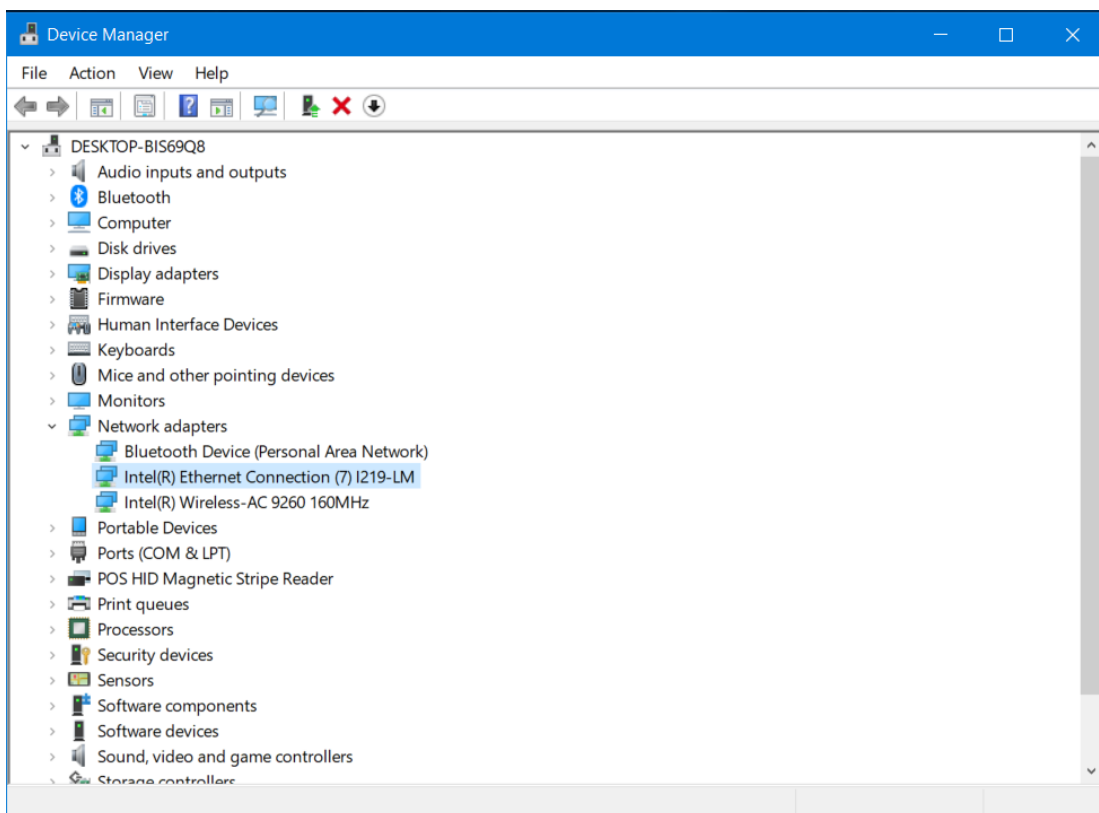
Enabling Wake on LAN

In order for Wake on LAN to function, the Network driver must be enabled (factory default).

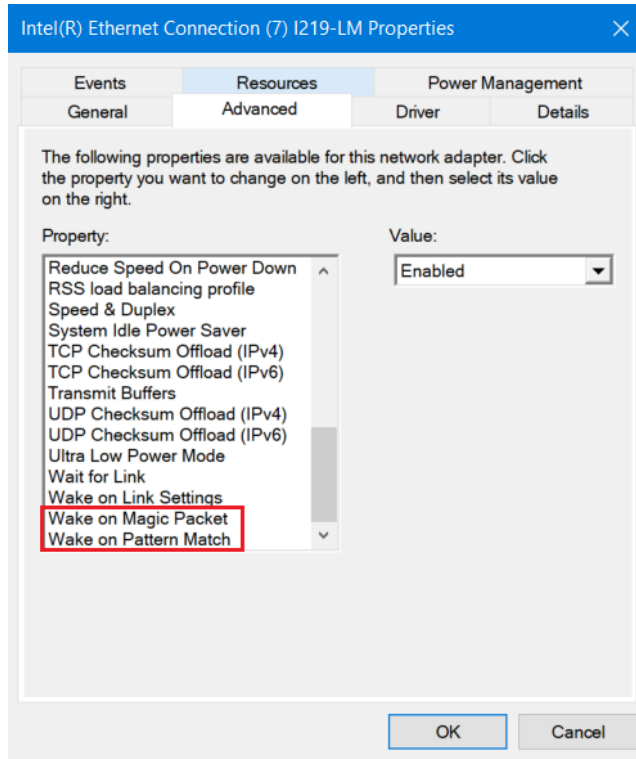
1. Right-click on **Start**, then select **Device Manager**.



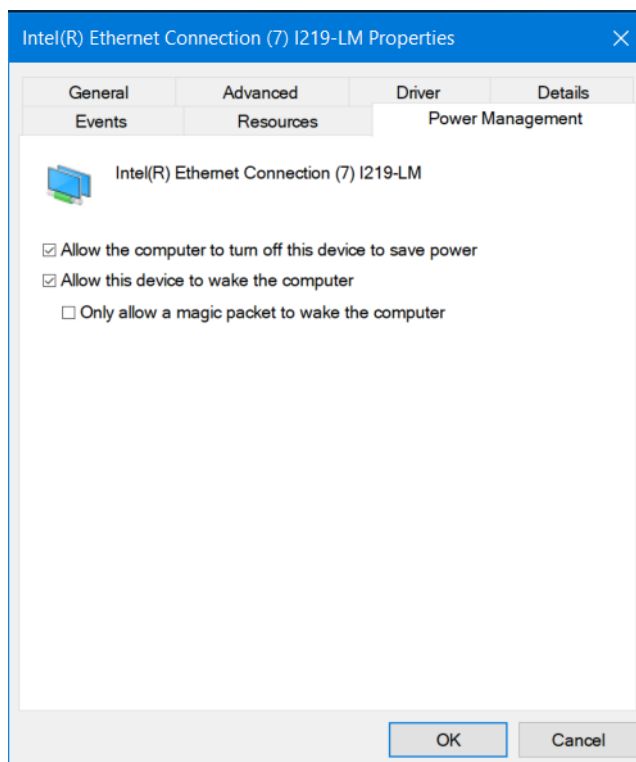
2. Select **Network adapters**.
3. Right-click **Intel(R) Ethernet Connection I219-LM >> Properties**.



4. Under the *Advanced* tab, *Wake on Magic Packet* and *Wake on Pattern Match* should be enabled. Select **OK** after making any changes.



5. Under the *Power Management* tab, *Allow this device to wake the computer* option box should be checked. Select **OK** after making any changes.



Chapter 8: BIOS Setup

Entering Setup

1. Connect an alphanumeric USB keyboard to the terminal.
2. Apply power to the terminal.
3. When you see the NCR logo displayed, press **[Del]** or **[F2]**.

Selecting Menu Options

The following keyboard controls are used to select the various menu options and to make changes to their values.

- Use the arrow keys to select (highlight) options and menu screens.
- Use the **[Enter]** key to select a submenu.
- Use the **[+]** and **[-]** keys to change field values.
- To view help information on the possible selections for the highlighted item, press **[F1]**.
- To save the changes, move the cursor to the *Save and Exit Menu*, select **Save Changes & Reset**, and press **[Enter]**.

Enabling ONESHOT

When the Power Switch is pressed for four seconds, the hardware level override of the processor forces an uncontrolled shutdown. This can corrupt the Operating System. The ONESHOT feature disables this hardware override. To turn on the ONESHOT feature, follow these steps:

1. Enter *BIOS Setup* using the **[Del]** or **[F2]** hotkey.
2. In *Setup*, go to **Advanced** → **NCR POS** → **ONESHOT Control**.
3. Set the *ONESHOT Control* setting to **ENABLED**.
4. Press **[F4]** to save and exit.

Accessing Serial Number and Class-Model Information

Below is an example of a VbScript code on how to obtain the Serial Number and Class-Model Information of the terminal.

```
On Error Resume Next
DIM returnValue
DIM version

strComputer = "."
Set objWMIService = GetObject("winmgmts:\\." & strComputer &
"\root\cimv2")
Set colItems = objWMIService.ExecQuery("Select * from Win32_
ComputerSystem",,48)
For Each objItem in colItems
Wscript.Echo "Class Model: " & objItem.Model
Wscript.Echo "Serial Number: " & objItem.Name
Next
```

Restoring Factory Settings

To reset all values to their default settings, press **[F3]** and then **[Enter]** when the confirmation message is displayed. The terminal automatically loads the BIOS default values. To save the factory default values, go to the *Save and Exit Menu*, select **Save Changes & Reset**, and select **[Enter]**.

Chapter 9: BIOS Updating Procedure

Introduction

The BIOS is located in the Serial Peripheral Interface (SPI) chip on the processor board. This chapter discusses procedures on how to update the terminal SPI and/or BIOS. The update software is distributed via the NCR Website:

http://www5.ncr.com/support/support_drivers_patches.asp

The BIOS update can be performed using the following methods:

- Bootable USB Memory Device
- Windows Flash Executable

Prerequisites

The following are required to perform a SPI/BIOS update:

- USB Alphanumeric Keyboard
- BIOS Software. Download from the NCR Website:
http://www5.ncr.com/support/support_drivers_patches.asp

USB Flash Key update prerequisites

- USB Flash Key with sufficient space for the update files.
- Access to a USB port on the terminal to be updated that is enabled in the BIOS (via BIOS setup).

Windows Flash Executable update prerequisites

- There should be no other programs running while the BIOS/SPI is updating.
- The Windows Flash Executable is designed to run from an Administrator account.

SPI/BIOS Updating Procedures



Note: When replacing the NCR CX5 All-in-One POS (7773) motherboard in the field, the BIOS will need to be flashed to the latest version based on the OS Platform running on the terminal. The BIOS is different according to the target operating system. Always check http://www5.ncr.com/support/support_drivers_patches.asp?Class=External/Terminals\7773\display for the best and latest BIOS according to the operating system.

BIOS Version Scheme:

- T0x: Windows/Linux
- TAx: Android

Using the Bootable USB Flash Key

1. Create a USB Flash Drive by installing the BIOS update package to this USB key.



Note: The USB flash drive disk size must be more than 512MB.

Linux PC

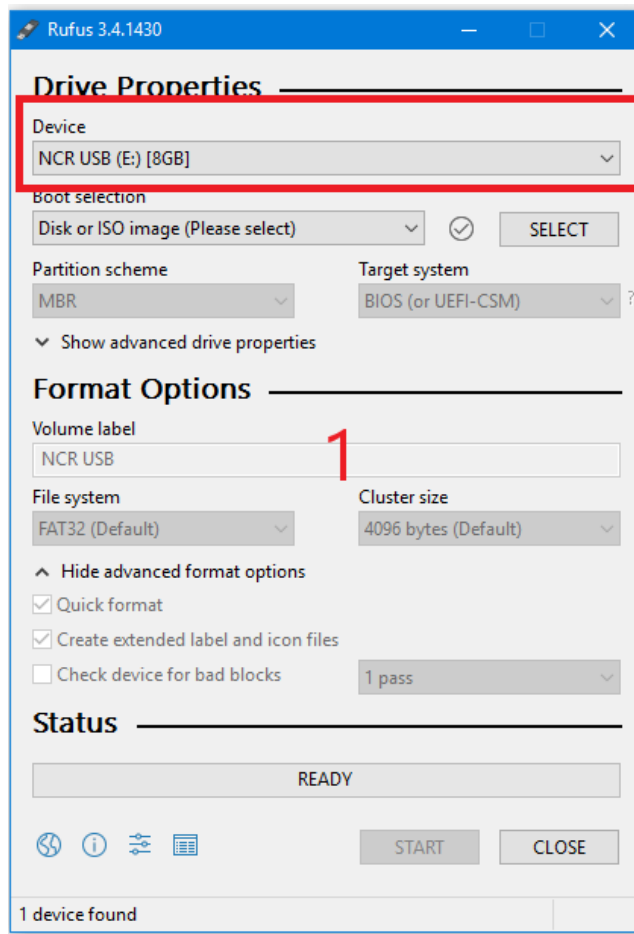
Use “dd” Linux command to deploy image in USB key:

```
sudo dd if=/CX5_UPDATE_BIOS_T0B.iso of=/dev/sdX
```

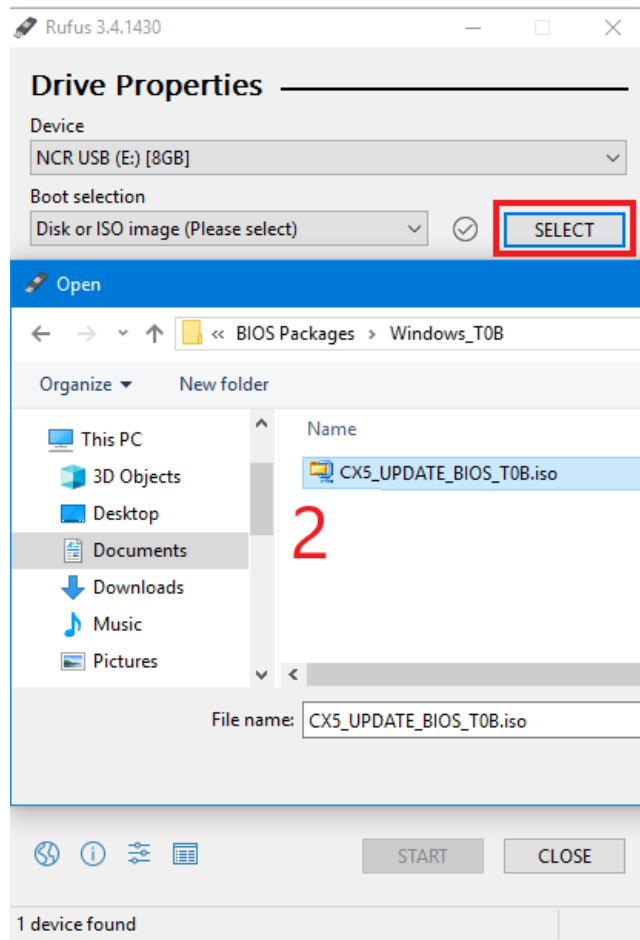
Windows PC

Download the Rufus Tool from the Rufus Website: <https://rufus.ie/> and use the tool to deploy image into USB key.

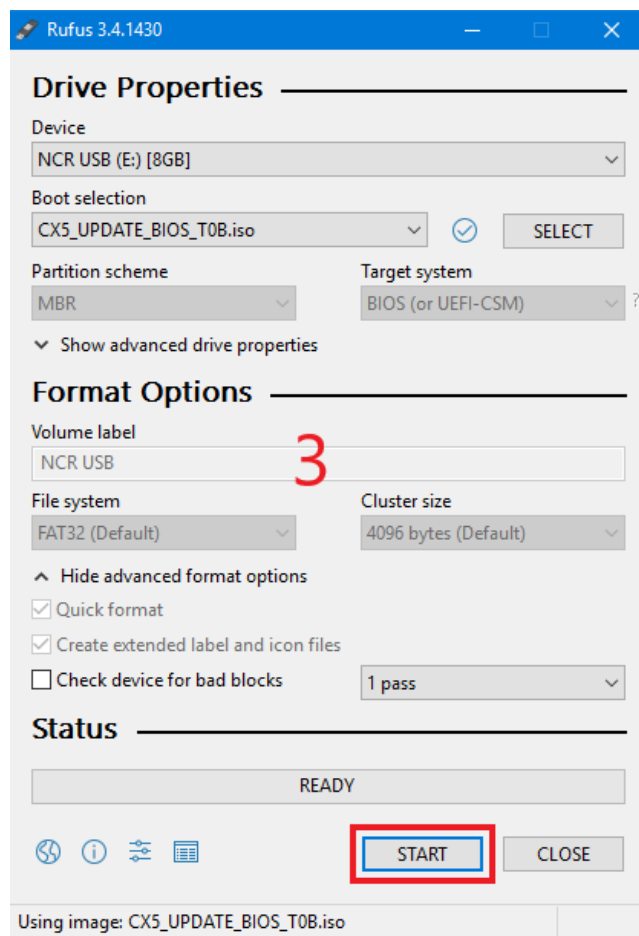
- a. Select the device from the Device drop-down list.



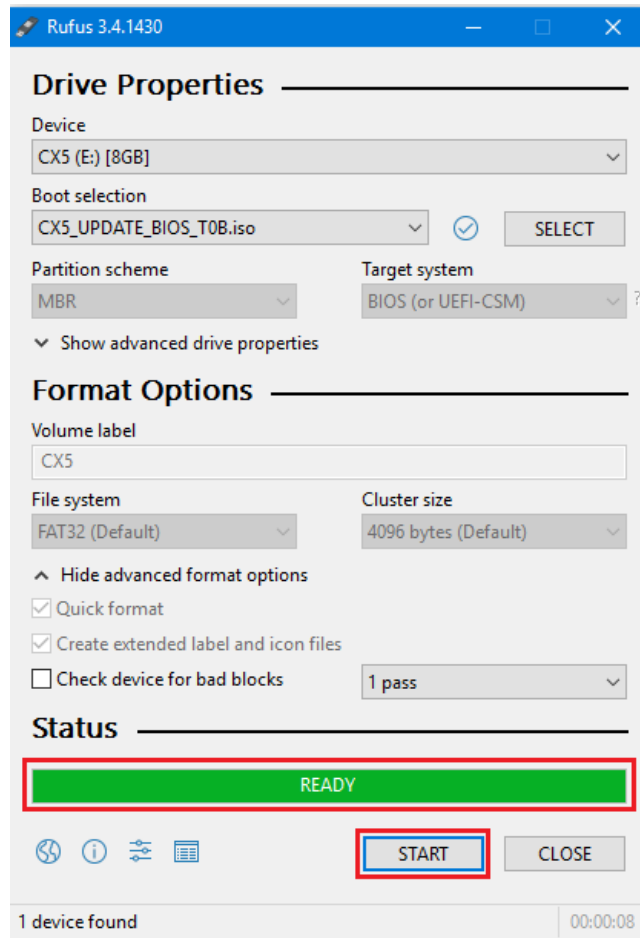
- b. Press **Select** to choose the image from the Boot Selection drop-down list.



- c. Press **Start** to load the image.



- d. When the load is complete, select **Close**.



2. Insert the CX5 USB Flash Drive into the USB Port.
3. Press [**F8**] during startup to bring up the Boot Menu.
4. Select the USB device to boot the CX5 BIOS flash key. An option menu will load.
5. Select option [**1**] to update BIOS with DMI preserved.



Note: After the update has completed and the terminal is rebooted, the terminal may reboot additional times as it powers up. This is normal and expected behavior due to the nature of the features of the BIOS/SPI.

Using the Windows Flash Executable



Note: Close all running programs prior to updating the BIOS.

To run the executable, right-click on the file and select **Run as administrator**. The terminal will reboot after the flash process has completed.



Caution: The reboot is important to ensure the BIOS initializes properly. Do not interrupt the reboot process.

Chapter 10: Initial Terminal Imaging

Introduction

Factory default HDD/SSD images for the CX5 are distributed on bootable auto-imaging USB Flash Drive media. The following procedures describe how to apply/restore an image on the terminal.



Warning: Using this procedure will replace any previously stored OS images created using the *Disk Image Backup and NCR Image Recovery Tool*.



Note: A USB Keyboard is required to perform this operation.

Imaging Procedure

1. Connect the USB flash drive to the target terminal that you wish to image.
2. Connect a USB keyboard to the terminal.
3. Power on the terminal and boot from the USB Flash Drive. This can be done by pressing **F8** during the boot and choosing the USB option (**NCR**), or by entering *BIOS Setup* and changing the boot order.
4. The system boots in the Windows PE OS environment. Press **Y** on the keyboard at the confirmation prompt to re-image the terminal.
5. When the imaging process is complete, enter **Exit** on the keyboard to reboot the system.
6. After the reboot, remove the USB Flash Drive and disconnect the keyboard.

Appendix A: **Wireless Adapter Switching**

Wireless Adapter Switching is a feature that disables the wireless adapter when a wired Ethernet connection is present.

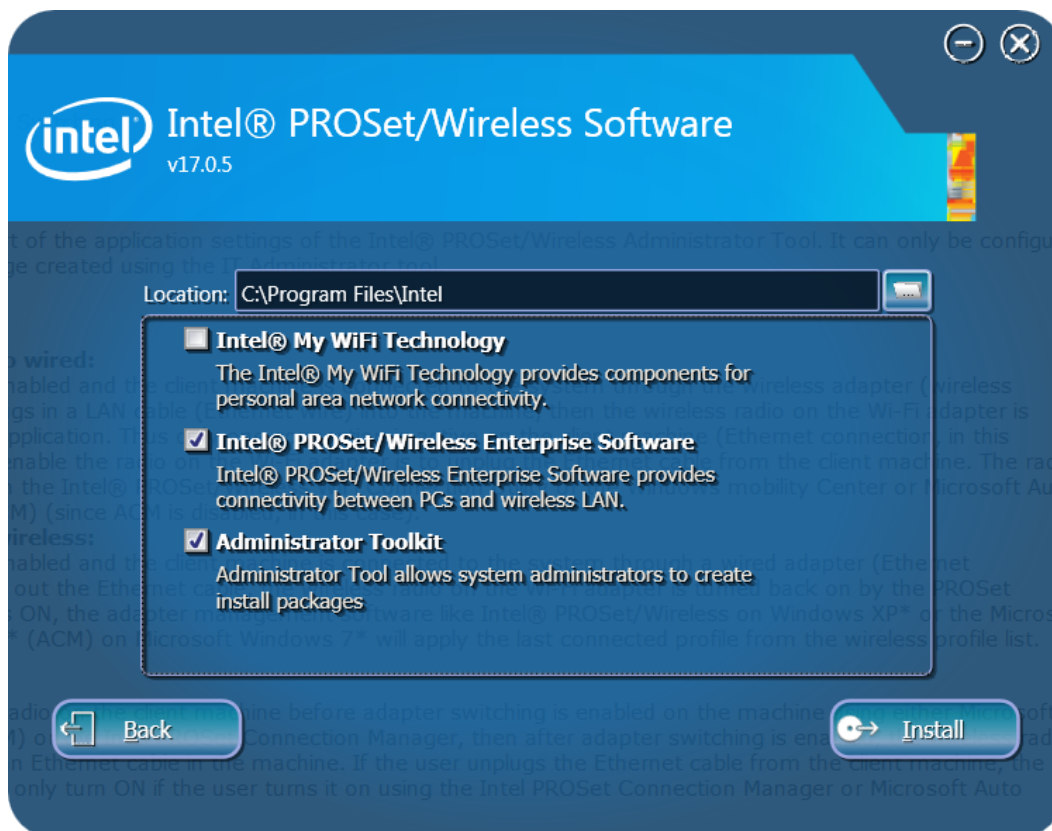
The latest NCR OS Images include the driver, but is not pre-installed. The driver can be installed from the `\Install\drivers\wireless` directory.

Installing the Software and Driver

1. Run the Intel `.exe` self-extracting executable.
2. Agree to the End User License Agreement (EULA) and choose **Customize**.

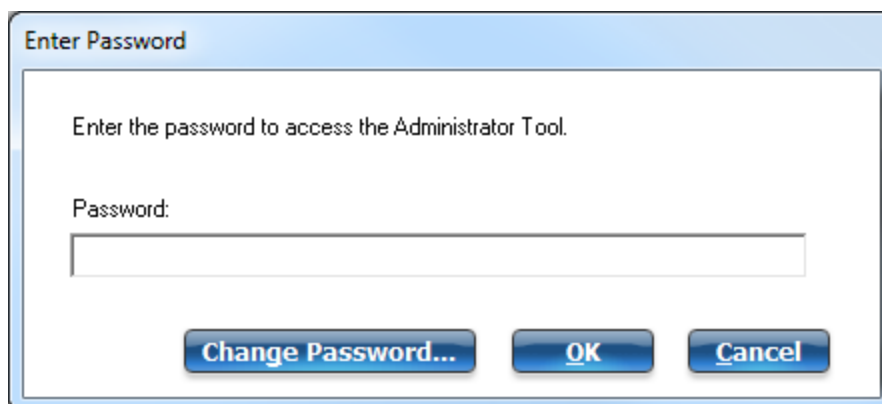


3. Check both **Intel® PROSet/Wireless Enterprise Software** and **Administrator Toolkit**. Clear the check box for **Intel® My WiFi Technology**. Click **Install**.

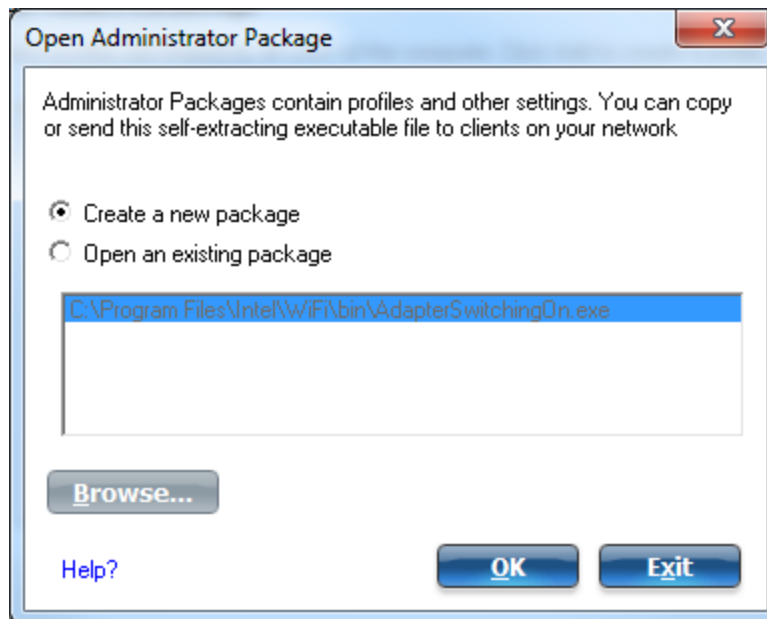


Installation takes several minutes (progress bar shown on-screen).

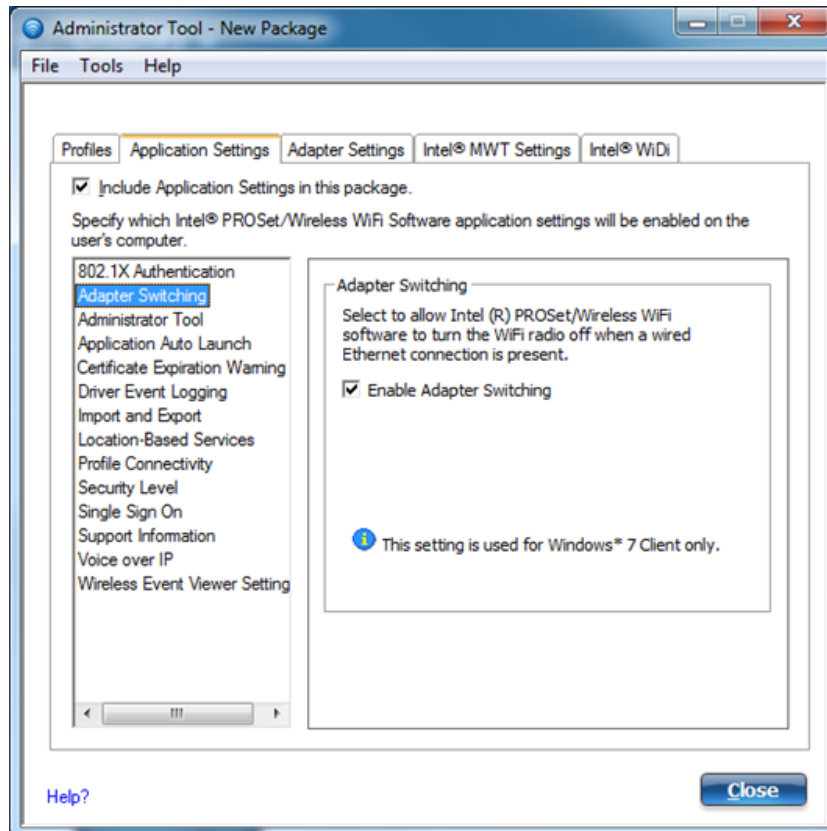
4. After the installation is complete, click **Start**>>**Wireless Administrator Tool**.
5. Enter the **Administrator Tool Password** (not the Windows Administrator password). You are prompted to create a password if this is the first time using the tool. The password cannot be blank.



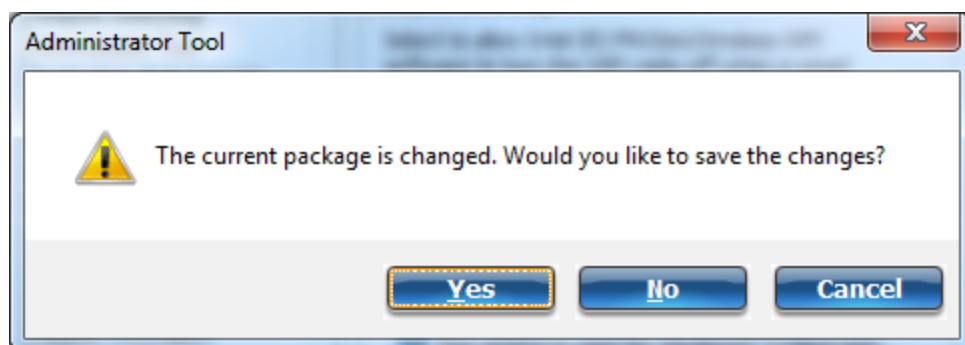
6. Select **Create a new package**>>**OK**.



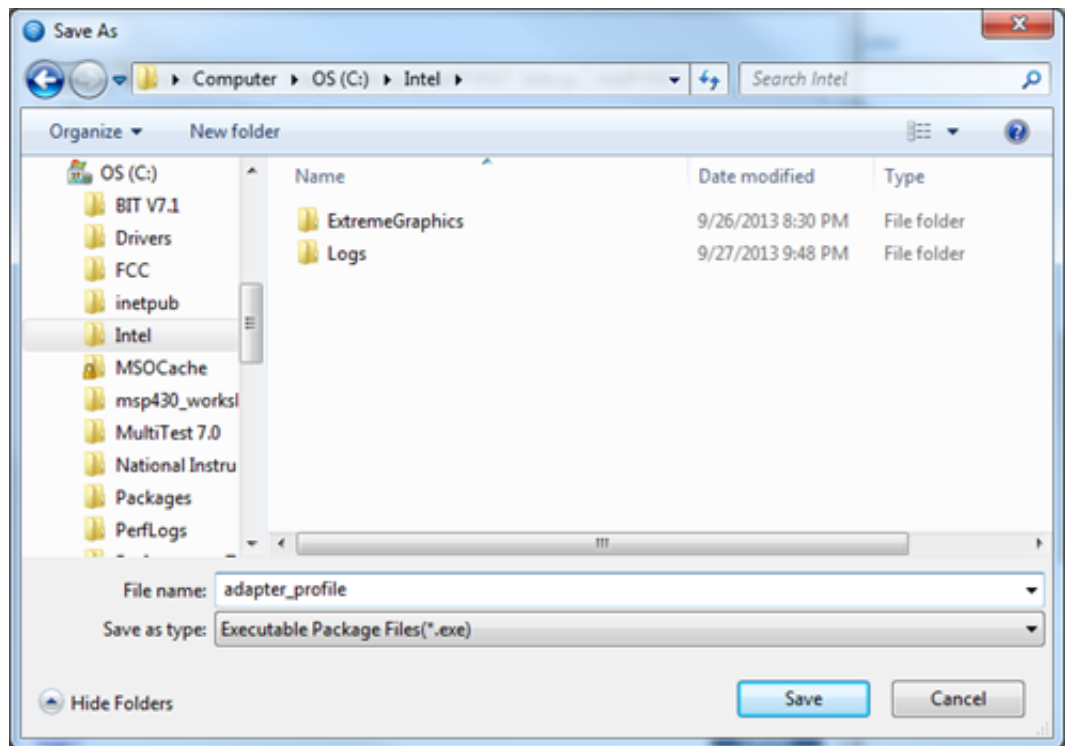
7. Select the *Application Settings* tab.
8. Check **Include Application Settings in this package**.
9. Select **Adapter Switching**.
10. Check **Enable Adapter Switching**.
11. Click **Close**.



12. Click **Yes**.



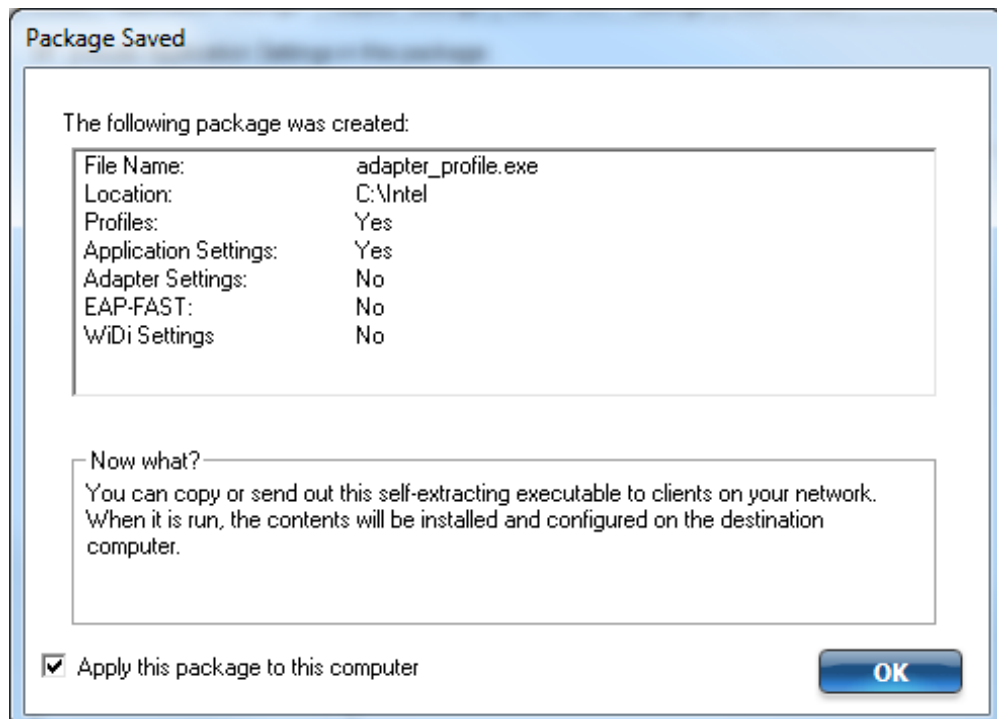
- Enter a **filename** and choose a **location** to save the package file.



- Click **Finish** after the save operation completes.
- Click **Apply this package to this computer**.



Note: You can open and apply the saved package file on other computers that have the Administrator Toolkit installed.



When connecting and disconnecting the wired LAN cable you should now see system tray icons, indicating PROSet disabling and enabling the wireless adapter.

Appendix B: APA Graphical Display

Configuring the APA Graphical Display

To configure the APA Graphical Display to read Kanji characters, follow these steps:

1. Download the latest RPSW Installer from the NCR website:

http://www5.ncr.com/support/support_drivers_patches.asp?Class=External/RPSW\5\3\4\0\display

2. Install RPSW.
3. Run RSM.



4. In the left menu, select **Peripherals** >> **Line Display**. In the *Line Display* window, select **Profile Name** >> **NCRLineDisplay.CX** >> **OK**.

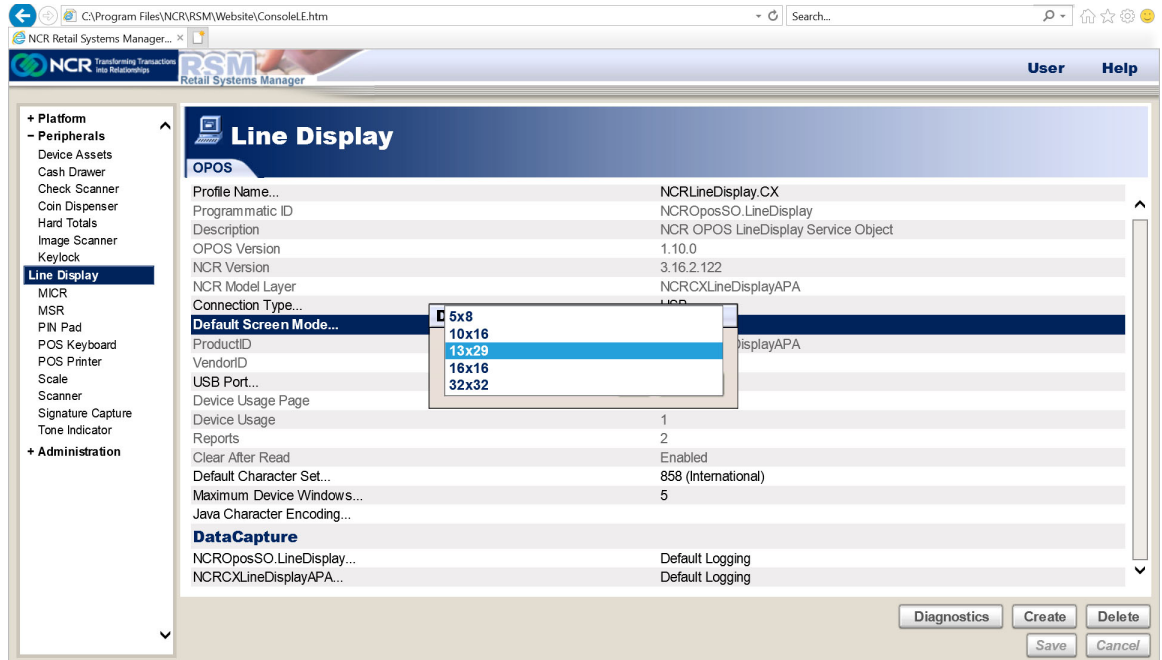


Note: To create your own profile, select the **Create** button.

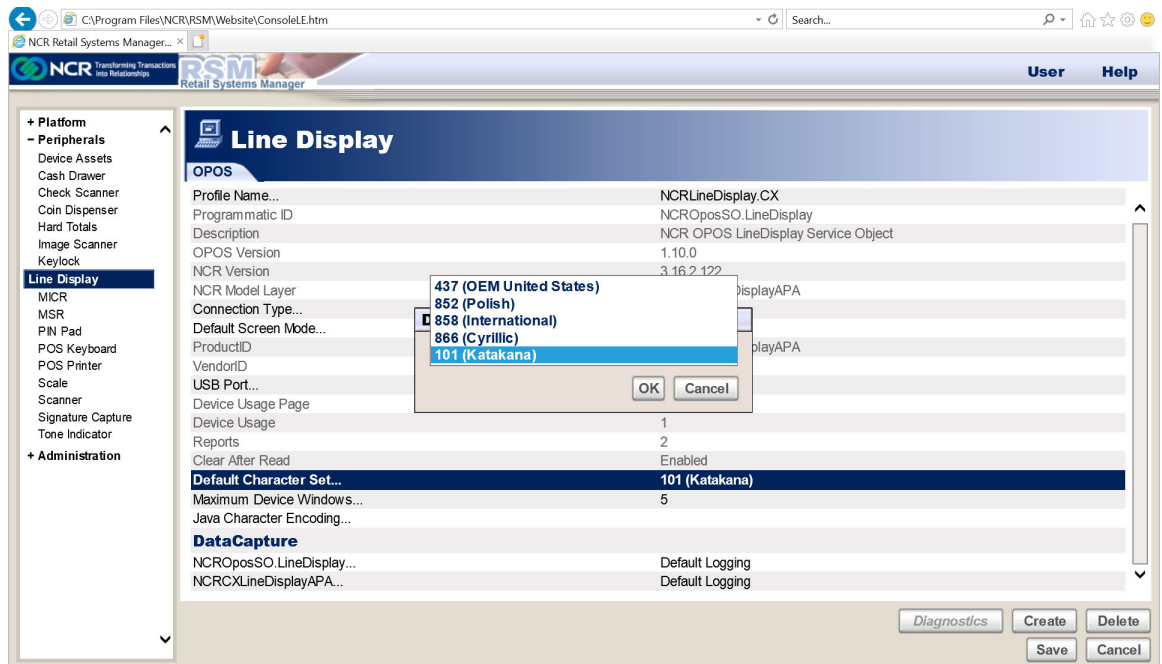
A screenshot of the NCR Retail Systems Manager (RSM) software interface. The window title is 'Line Display'. On the left, a navigation tree shows 'Peripherals' expanded to 'Line Display'. The main area displays configuration details for a profile named 'NCRLineDisplay.CX'. A dropdown menu is open over the 'Profile Name' field, showing a list of available profiles including 'NCR5992LineDisplay.1', 'NCRLineDisplay.1', 'NCRLineDisplay.2', 'NCRLineDisplay.5972', 'NCRLineDisplay.5973', 'NCRLineDisplay.CX', 'NCRXSeriesIntLineDisplay', 'XseriesInt', and 'XSeriesV2'. The 'NCRLineDisplay.CX' option is selected. At the bottom right, there are buttons for 'Diagnostics', 'Create', 'Delete', 'Save', and 'Cancel'.

| Profile Name... | NCRLineDisplay.CX |
|----------------------------|-------------------------------------|
| Programatic ID | NCR OposSO.LineDisplay |
| Description | NCR OPOS LineDisplay Service Object |
| OPOS Version | 4.40.0 |
| NCR Version | |
| NCR Model Layer | |
| Connection Type... | LineDisplayAPA |
| Default Screen Mode... | LineDisplayAPA |
| ProductID | |
| VendorID | |
| USB Port... | |
| Device Usage Page | |
| Device Usage | 1 |
| Reports | 2 |
| Clear After Read | Enabled |
| Default Character Set... | 858 (International) |
| Maximum Device Windows... | 5 |
| Java Character Encoding... | |
| DataCapture | |
| NCR OposSO.LineDisplay... | Default Logging |
| NCRCXLineDisplayAPA... | Default Logging |

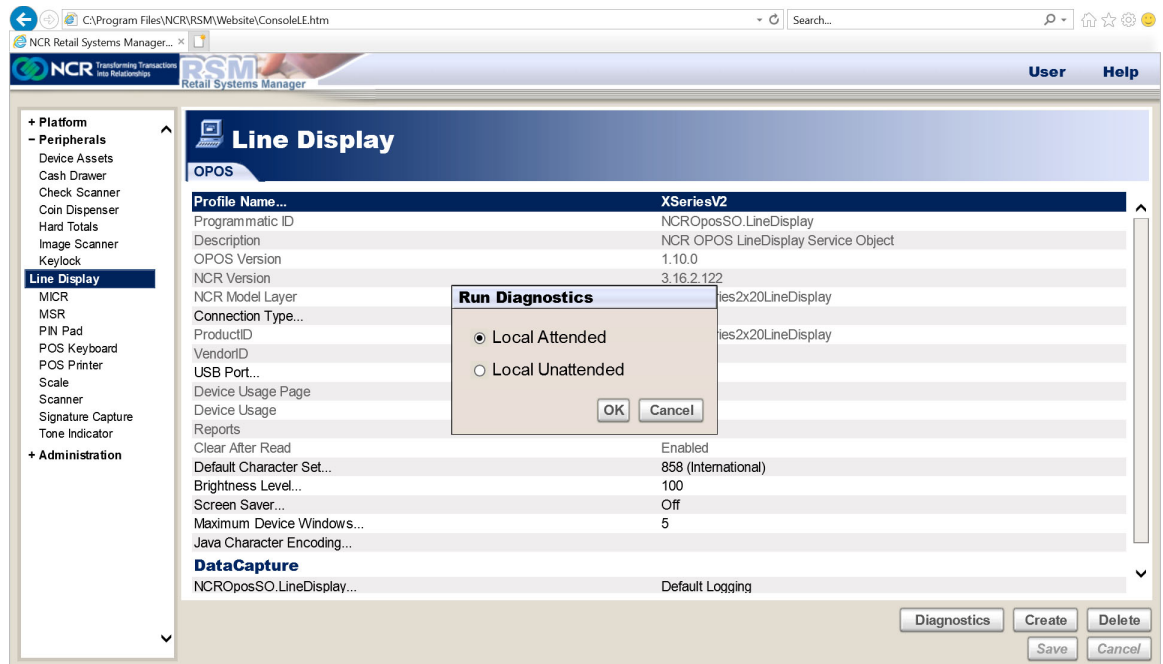
5. Select **Default Screen Mode** >> **13x29** or **16x16** >> **OK**.



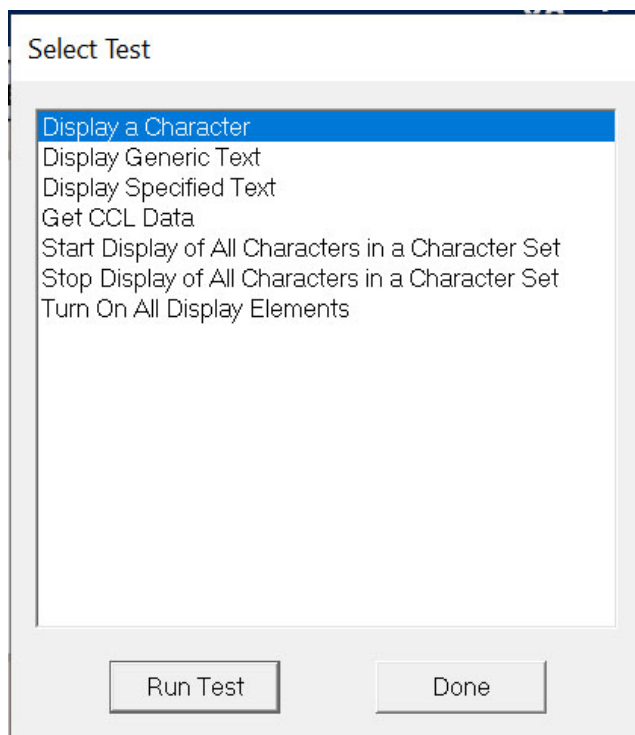
6. Select **Default Character Set** >> **101 (Katakana)** >> **OK**.



7. Select the **Diagnostics** button.
The *Run Diagnostics* window is displayed.



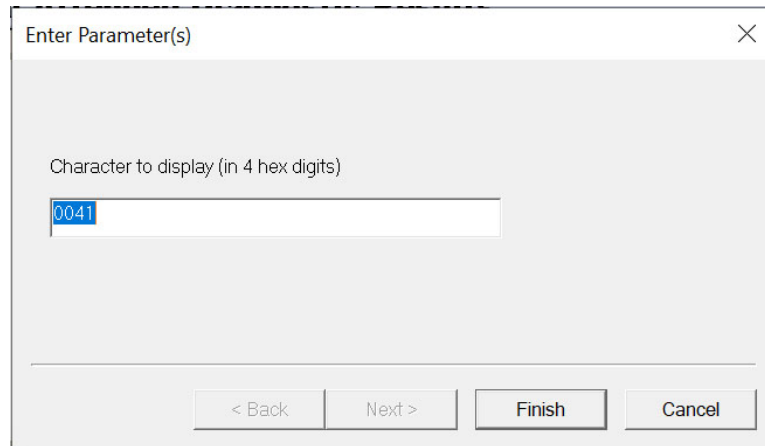
8. Select **Local Attended** >> **OK**.
The *Select Test* window is displayed.



9. Select and run the desired test:

- **Display a Character** – Select this test to display a specific Kanji character.

Example: To display ツ, enter 8364, then select **Finish**.



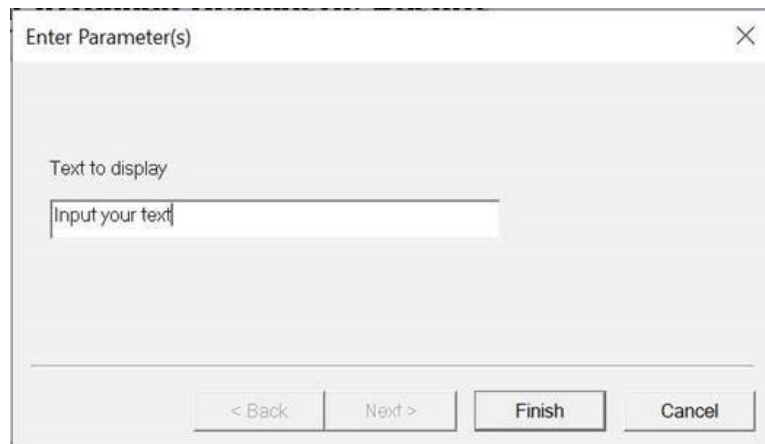
Enter Parameter(s) [X]

Character to display (in 4 hex digits)

0041

< Back Next > Finish Cancel

- **Display Specified Text** – Select this test to input and display the desired Kanji text.



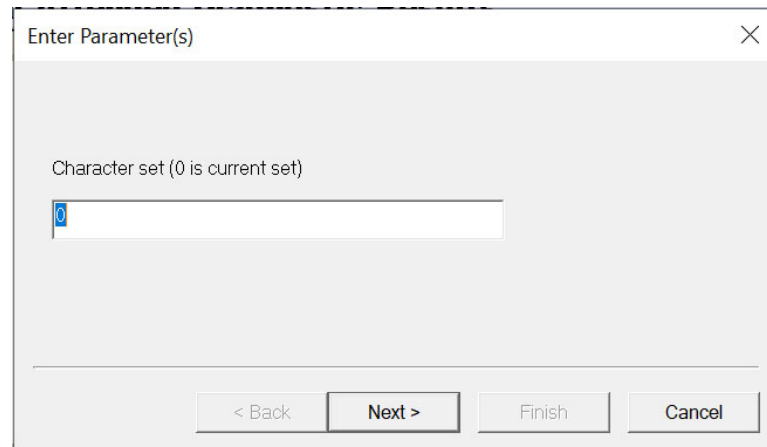
Enter Parameter(s) [X]

Text to display

Input your text

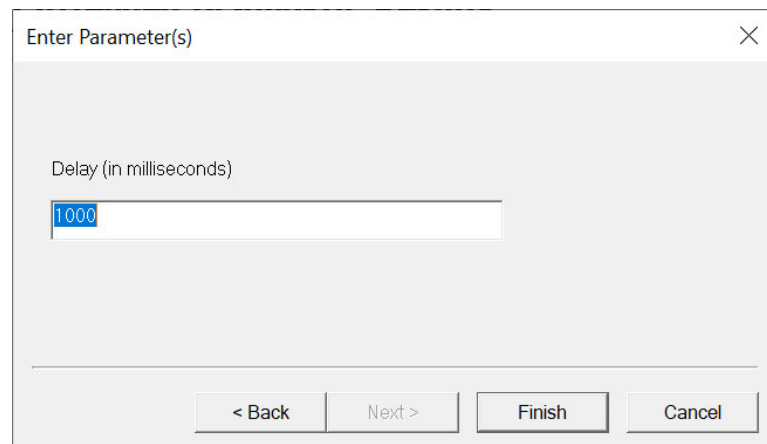
< Back Next > Finish Cancel

- **Start Display of All Characters in a Character Set** – Select this test to check and confirm the Kanji characters.
 - a. Enter the character set, then select **Next**.



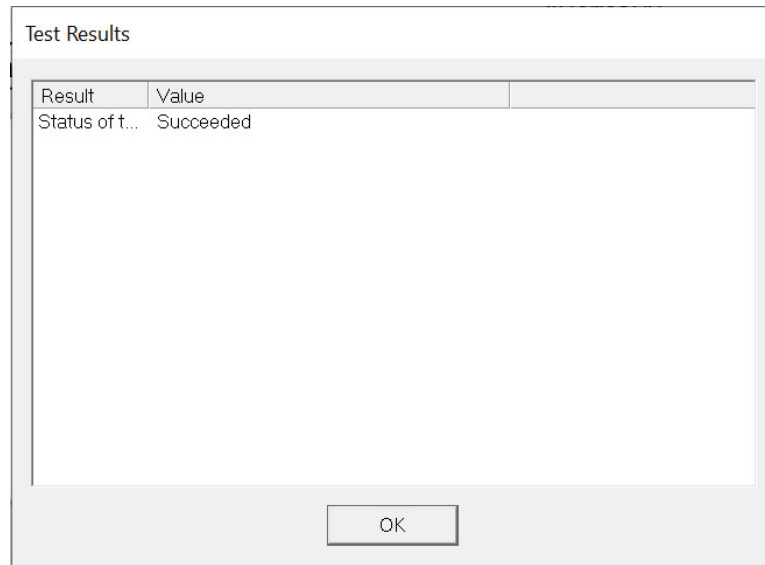
The screenshot shows a dialog box titled "Enter Parameter(s)" with a close button (X) in the top right corner. The main area contains the text "Character set (0 is current set)" above a text input field. The input field contains the number "0". At the bottom of the dialog, there are four buttons: "< Back", "Next >", "Finish", and "Cancel".

- b. Enter the time delay in milliseconds, then select **Finish**.



The screenshot shows a dialog box titled "Enter Parameter(s)" with a close button (X) in the top right corner. The main area contains the text "Delay (in milliseconds)" above a text input field. The input field contains the number "1000". At the bottom of the dialog, there are four buttons: "< Back", "Next >", "Finish", and "Cancel".

The *Test Results* window is displayed.



- c. Select **OK** to close the window.

Appendix C: Flip Functionality

The flip functionality is a feature that detects and automatically adjusts the screen orientation depending on the device position.

Default Screen Orientation



Flipped Sideways



Flipped Upwards



To enable the flip functionality, the G-Sensor driver must be installed. The NCR OS Image includes a pre-installed G-Sensor driver. The driver can be found in the `C:\Install\drivers\G-Sensor` directory. If not using an NCR OS Image, follow these steps:

1. Download the G-Sensor driver from the NCR website:
https://www5.ncr.com//support/support_drivers_patches.asp?Class=External/GSensor\Windows\Driver
2. Right-click on `Setup.exe`
3. Select **Run as administrator**.
4. Follow the GUI instructions to complete the installation.

Appendix D: CX Display Touch Tool

In CX terminals with multiple touch displays, Windows may have difficulty assigning the touch devices to the correct display. The CX Display Touch Tool is used to assign the touch device to its correct display. The tool sets the Windows display to Extended Desktop and assigns detected touch interfaces to the corresponding display.

The tool supports the following CX terminals:

- NCR CX3 POS (7776)
- NCR CX5 POS (7773)
- NCR CX7 POS (7772)

The tool is located in the following location: https://www5.ncr.com//support/support_drivers_patches.asp?Class=External/CXDisplay%5CTouch%5CTool%5CDisplay

Refer to the Readme document for the installation procedure.