

Network Configuration Device Setup

V02.02
26 JANUARY 2022

Overview

Carbon's Network Configuration Device (NCD) will help you configure and test your network connection to Carbon (Carbon servers) prior to your product's arrival. This NCD will help to ensure that your network environment is ready for a seamless installation of your Carbon product(s).

1. What Is an NCD?

The NCD is a laptop computer that simulates the networking and software configuration of our printer and/or Smart Part Washer (e.g., Carbon product). For custom configurations, the NCD also allows access to network setting configuration features prior to your install day. Once the laptop is successfully configured to run on your network, we will securely record its network settings and then transfer them to your product upon installation.

2. Networking Prerequisites

Please refer to [Product Connectivity and Architecture](#) for more information about Carbon product connectivity.

3. Items Needed

NCD (Carbon provided)	Ethernet cable (customer)	2x USB-Ethernet Adapters – M3 only (Carbon provided)
		

4. Initial Setup

1. Take your NCD over to the location where the product will go. With an ethernet cable, plug your NCD into the exact physical port that the product will use. Plug in its power cord as well.



2. Power on your NCD by pressing the round button in the upper right corner of the keyboard.
3. Wait up to three minutes for the machine to boot.
4. **Store the 2x USB-Ethernet Adapters (M3 only) in a safe place, you will need them and a second ethernet cable to upload the network configuration to the printer during installation and setup.**

5. Basic Configuration Using DHCP

The basic configuration method will only work in cases where networking configuration of new third-party hardware (like our printer or part washer) does not require any pre-authorization or networking changes. If you require a static IP address, DHCP reservation, proxy setting, or custom domain name, please proceed to the custom configuration method. If you are not sure, feel free to try this basic configuration method first.

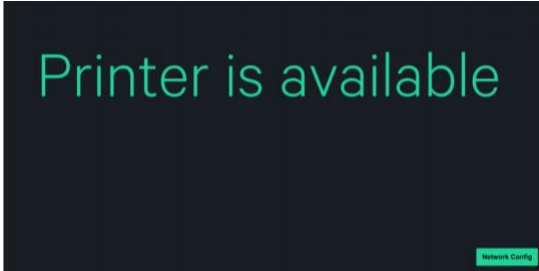
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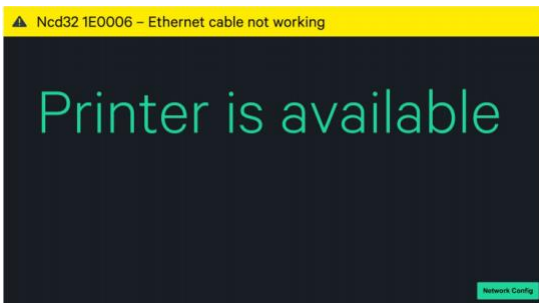
NCD Setup:

For a basic configuration, please follow these steps:

1. If you see the words "Printer is available" on the screen, then the NCD has been able to successfully reach the Carbon servers, and you can proceed to the **Customer Connection Verification section** below.



2. If you see a **yellow banner** on the top of the screen, this is an indication of a network issue.



3. **Basic Configuration Troubleshooting:** If the **yellow banner** persists for longer than 3 minutes,
 - a. Validate that the physical network port is operational.
 - b. Verify that the cable is properly connected to the laptop.
 - c. Reboot the system and see if the problem resolves by holding down the power button to turn it off, then pressing it again to turn it back on.
 - d. Try the **custom configuration** method below.

6. Custom Configuration

A custom configuration will be required if any one of these will apply to your product(s):

1. A static IP (Gateway, DNS) needs to be assigned.
2. A DHCP reservation is required (Product uses the same IP address based on the specific MAC address. Appropriate firewall rules can then allow access to Carbon).
3. A proxy is needed (Note: the proxy must allow access to Port 22).
4. A custom domain name is required (e.g., if your network does not allow public domain names to resolve to internal IP addresses).

In these cases, you will need to know the following configuration parameters prior to setup:

- Static IP:
 - IPv4 Address
 - Subnet Mask
 - Gateway Address
 - DNS Servers
- DHCP Reservation:
 - MAC Address
- Proxy:
 - Proxy Host
 - Proxy Username
 - Proxy Password

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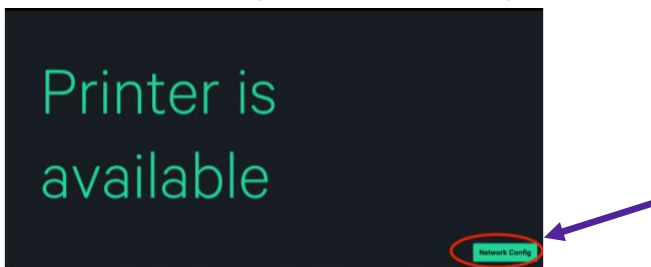
- Domain Name:
 - Full custom product name (Note: this name must be resolved by the DNS servers specified above).

Note: For multiple installations, please follow the same custom configuration steps for each product you plan to install. If your IT organization needed to make any changes to successfully connect the NCD, these changes will likely need to be repeated for additional products (e.g., allocating static IP addresses). Please ensure the analogous work to support the extra products is complete to help us achieve a seamless installation of all your Carbon products.

7. NCD Setup

For a custom configuration, please follow these steps:

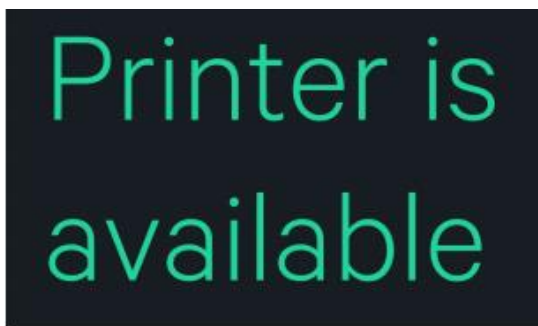
- Press the **"Network Config"** button on the bottom right to reach the Network Config screen.



- Fill in the required fields for the static IP address and/or proxy (as needed) and click **APPLY**. You do not need to click **PUBLISH** at this step.

A screenshot of the 'Carbon Network Config' screen. It has a light gray background and a 'LOGOUT' button in the top right. The screen is divided into three columns: NETWORK, PROXY, and HARDWARE. Each column contains several input fields with placeholder text. At the bottom right, there is a green button labeled 'Printer Panel'. A purple arrow points to this button.

- Once you think the NCD should be able to reach Carbon's servers, press the **"Printer Panel"** button in the bottom right, and check for the **"Printer is available"** screen with no alerts/errors.



- If you see the words **"Printer is available"** on the screen, then the NCD has successfully accessed the Carbon server. Use the **"Network Config"** button to navigate back to the Network Config screen and click **PUBLISH** (on the right side of the screen, above the "Printer Panel" button). After clicking **PUBLISH**, you can proceed to the Customer Connection Verification section below.
- Custom Configuration Troubleshooting:** If not, use the **"Network Config"** to access the Network Config screen again. Continue working with your IT team to update these network configurations and re-testing as needed until you reach the "Ready" screen.

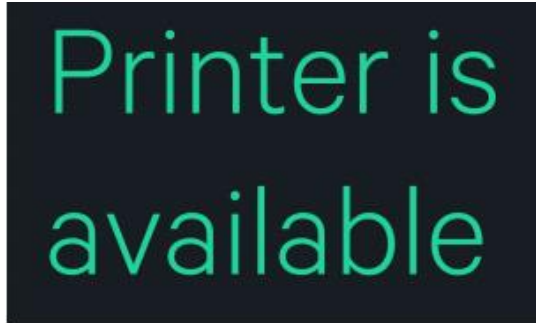
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4. **Optional Step:** For DHCP reservations, use the **MAC Address** shown in the upper right corner of the NCD.

8. Customer Connection Verification

At this stage you should have seen the screen below (without any alert or yellow banner):

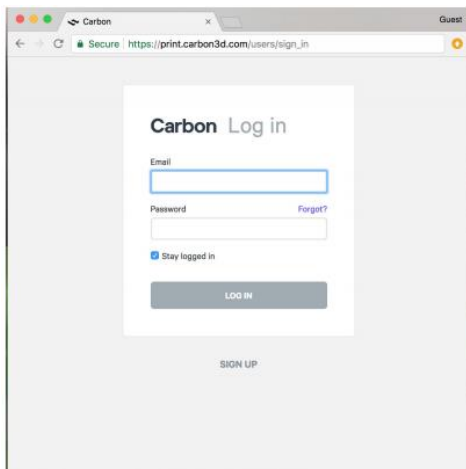


If you do NOT see the above screen, please go back to **5. Basic Configuration Using DHCP** or **6. Custom Configuration** sections above.

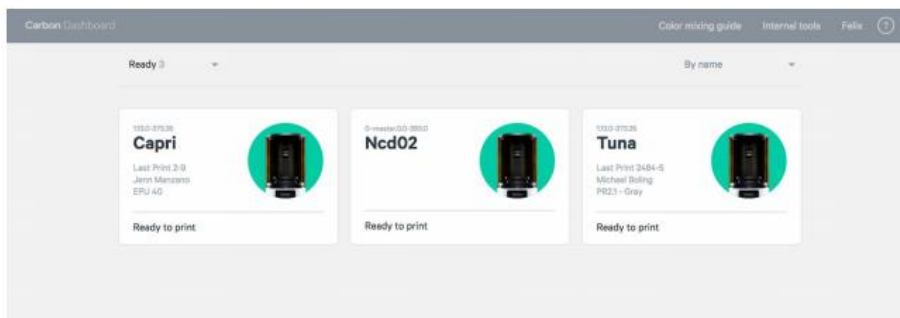
Customer Computer(s) Setup:

Now you will need to confirm that each computer that you expect to use to access the product can reach the NCD. Please follow these steps from your computer:

1. Open your Chrome web browser and login at <https://print.carbon3d.com> with your Carbon account information (contact your Onboarding Consultant if you do not have such an account).



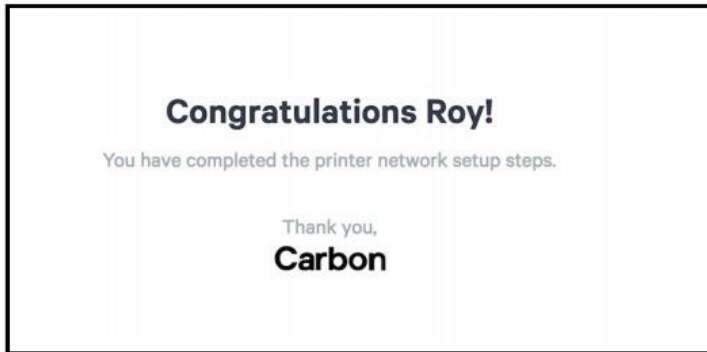
2. You should see the NCD on your product dashboard (e.g., a "printer" named Ncd##).



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3. Click on the NCD icon and you should see a "Congratulations" screen



- a. Once you see this Congratulations screen, then this computer is able to successfully connect to the NCD.
- b. Repeat for each additional computer as necessary.

Note: Unless you specified a custom domain name in the **Custom Configuration** section above, your computer will need to connect to the NCD via a public DNS name that resolves to a private IP address within your network. If this is a problem, please work with your network administrator to identify a custom domain name that will work, then use the Custom Configuration method above to complete your network configuration settings. If you're still having problems, contact Carbon.

Success Criteria

- ☐ - Ready Screen Visible on NCD
- ☐ - Congratulations Message Visible on computer

If the above two items are checked, you are ready for install day.

IMPORTANT:

1. **M1/M2 & L1 customers** - Please leave the NCD power adapter plugged in and the ethernet cable connected to the network until a Carbon representative arrives to install your product. After printer installation and setup, please package and return the NCD and power adapter using the pre-addressed return label located in the plastic envelope on the box.
2. **M3 customers** - Please leave the NCD power adapter plugged in and the ethernet cable connected to the network until your printer arrives and you are ready to install your product. After printer installation and setup, please package and return the NCD, power adapter, and 2x USB-ethernet adapters using the pre-addressed return label located in the plastic envelope on the box.
3. **Please save the NCD packaging** as you are responsible for sending the device back to Carbon within **3 business days** from the date of training (or setup on M3 printers) or you will be subject to a late fee. If the NCD is not returned within 2 weeks from the date of training/setup, you will be responsible for the cost to replace the equipment.