

User Documentation [DRAFT]

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1 Overview

The stratus print system consists of four main parts. The web page, hub, nodes and printer control box. The web page is where the system is controlled. From the web page you can set up the system, monitor printers and control print jobs. The hub is the heart of the system. It is used to relay information from the printer control box and the nodes to the web page. The printer control box does what the name implies. Allows control of the printer through the web site as well as provides a button for canceling and completing print jobs.

1.1 General Work flow

1. Upload a print job trough the web interface
2. When the job is finished printing the red light on the printer control box will blink. This means it is safe to clean off the print service and prepare the surface for the next print job.
3. When the surface is ready for the next print job press the flashing red button after about 10 seconds the light will turn solid and the next job will start.

2 Hub

2.1 Set up

1. Ensure the hub is plugged in to an outlet. The red light will be illuminated on the node when it is on.

TODO ADD GRAPHIC NODE ON



2. If this is the first time this system is being used, please consult the technical documents for setting up the Hub. Otherwise, proceed to the Nodes section.
3. If you encounter difficulties with the Hub, unplug the Hub, then plug it back in. The system is designed to reset itself and re-connect after initial set-up is completed.

3 Nodes

3.1 Set up

1. Ensure the node is plugged in to an outlet, and the switch is in the **ON** position (it should be ON by default). The red light will be illuminated on the node when it is on.
TODO ADD GRAPHIC NODE ON



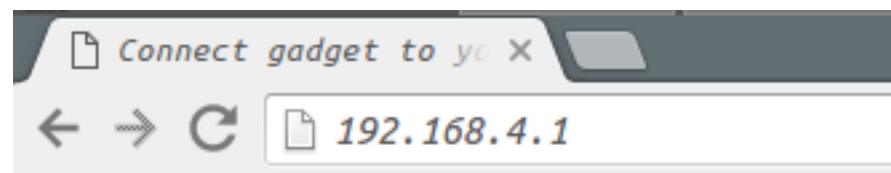
If the node has already been activated, you are done with this section, proceed to the Web section (Part 3).

2. If this is the first time the node is being connected to the hub, you will need to activate it. To do this you will need a device capable of connecting to a wifi network, such as a smart phone, tablet, or computer.

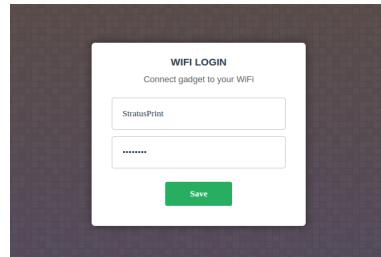
Under wifi networks, you should see a network called **SetUpGadget_FPFDHI**

Note that the "FPFDHI" can be any sequence of letters and is specific to the node. Connect to that network. *Once connected you may get a warning that the network does not have access to the internet. That is normal, proceed anyway.*

3. Open your browser and navigate to **192.168.4.1**



This will bring up a wifi login page:



Type the information as follows (*case matters, use both upper- and lower-case letters as indicated*):

The wifi name is **StratusPrint**

The password is **FusRoDah**

This is the default wifi name and password for the hub and can be changed later.

4. Click the save button. If successful, the **SetUpGadget_FPFDHI** network should disappear from your visible networks. This may take 1-3 minutes. If the network is still visible, please turn your wifi off and on again to confirm it remains visible. If it is still there, please start over from step 2 and make sure you correctly input all information.

3.2 Sensors

This section provides more information on the sensors currently attached to the node, and how to add new sensors. You may skip this section if you are not adding or replacing sensors.

Node Pinout



Job Button

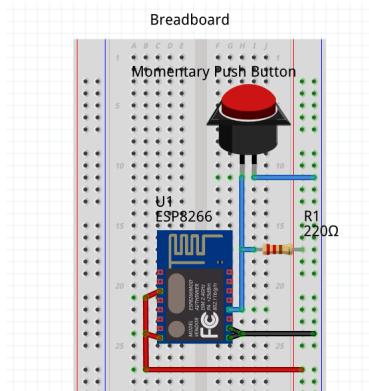
The "Job Button" indicates when a job is complete, and starts a new job when pressed. This provides an easy way for a user to know when a job is completed.



Operation

Once a print is complete this button will blink repeatedly until it is pressed. Remove the completed project, clean the print bed, then press the button to start the next job in the print queue.

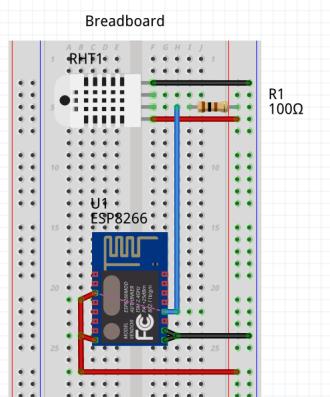
Wiring Diagram



Temperature and Humidity

The temperature and humidity sensor will report the current room conditions. It can detect dangerous conditions for 3D printing and act as an early warning system if the conditions may lead to print errors.

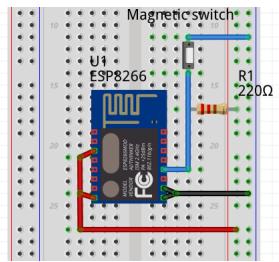
Wiring Diagram



Door Sensor

The door sensor is a magnetic switch mounted to the entrance of the printing lab. This allows for detection of an open or closed door, which may affect printing conditions.

Wiring Diagram



Additional Sensors

The nodes were set up to be universal, therefore they are compatible with many sensors. The nodes come with a breadboard so they can easily be reconfigured.

4 Web

4.1 Set up - Administrator

Skip this section if you are not an Adminstrator. Go to Set up - User.

Adding/Deleting/Managing Users

Click the **User Management** menu on the left-hand side of the page. This page will show you the current users, along with information about each user.

TODO ADD user-manage

The screenshot shows the 'User Management' page with a list of users. The columns include ID, Name, Email, Active, Last Sign In, # Addresses, and Created. A confirmation message at the bottom states: "The user was successfully updated." Below the list is an 'Add New User' form with fields for Name, Email, and Admin Privileges, and a 'Create New User' button.

ID	Name	Email	Active	Last Sign In	# Addresses	Created	Actions
2	Michael	michael@protusprint.com	✓	Thursday, May 09 at 01:45 PM	1	Monday, March 14 at 03:51 PM	✓ ✗
14	Shaz Amin	shazamin@protusprint.com	✓	Saturday, May 07 at 12:23 AM	1	Tuesday, March 10 at 10:58 PM	✓ ✗
70	Bob Shannon	bobshannon@protusprint.com	✓	Wednesday, May 07 at 11:05 PM	1	Sunday, April 10 at 11:07 PM	✓ ✗
71	Samneep	samneep@protusprint.com	✓	Tuesday, April 12 at 01:05 PM	1	Monday, April 11 at 01:11 PM	✓ ✗
84	Sheen	sheen@protusprint.com	✓	Friday, April 23 at 12:41 PM	1	Thursday, April 14 at 02:32 PM	✓ ✗
92	Nolan Foster	nolanfoster@protusprint.com	✓	Wednesday, April 27 at 03:07 AM	1	Friday, April 26 at 03:55 PM	✓ ✗
99	Username	username@protusprint.com	✗	Has not yet signed in	1	Wednesday, May 07 at 02:41 AM	✗ ✓
100	Admin	admin@protusprint.com	✓	Saturday, May 07 at 10:41 AM	1	Wednesday, May 07 at 02:25 PM	✓ ✗
101	Aaron Preston	aaronpreston@protusprint.com	✓	Has not yet signed in	1	Thursday, May 07 at 02:17 PM	✓ ✗
102	Robert Shannon	robertshannon@protusprint.com	✓	Friday, May 09 at 07:41 PM	1	Thursday, May 07 at 11:46 PM	✓ ✗

- Adding a User:** Scroll down to the Add New User portion of the page. Add the user's name, e-mail address, and check the box titled "Grant Admin Privileges" if you would like the user to be an admin. You will receive a confirmation message below the "Users" section if successful.
- Deleting a User:** Click the red trash icon under the "Actions" column to remove a user. You will receive a confirmation message below the "Users" section if successful.

The screenshot shows the 'User Management' page with a modal dialog titled 'Delete User'. The dialog asks, "Are you sure that you want to delete this user? This action is irreversible." It contains two buttons: 'Yes, Delete This User' (highlighted) and 'Nevermind'. Below the modal is a list of users with their details and actions. A confirmation message at the bottom states: "The user was successfully deleted."

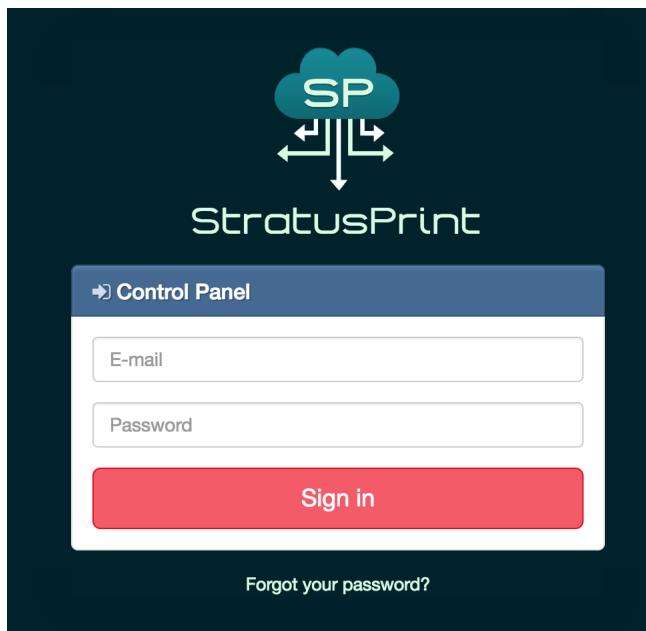
ID	Name	Email	Active	Last Sign In	Created	Actions
2	Michael	michael@protusprint.com	✓	Saturday, May 07 at 12:23 AM	Monday, March 14 at 03:51 PM	✓ ✗
14	Shaz Amin	shazamin@protusprint.com	✓	Saturday, May 07 at 10:10 PM	Tuesday, March 10 at 10:58 PM	✓ ✗
70	Bob Shannon	bobshannon@protusprint.com	✓	Tuesday, April 12 at 00:18 PM	Sunday, April 10 at 11:07 PM	✓ ✗
71	Samneep	samneep@protusprint.com	✓	Friday, April 29 at 12:00 PM	Monday, April 11 at 01:11 PM	✓ ✗
84	Sheen	sheen@protusprint.com	✓	Wednesday, April 27 at 10:07 AM	Thursday, April 28 at 10:38 PM	✓ ✗
92	Nolan Foster	nolanfoster@protusprint.com	✓	Wednesday, May 07 at 10:41 AM	Friday, April 27 at 01:55 PM	✓ ✗
99	Username	username@protusprint.com	✗	Has not yet signed in	Wednesday, May 07 at 02:25 PM	✗ ✓
100	Admin	admin@protusprint.com	✓	Saturday, May 07 at 02:41 PM	Wednesday, May 07 at 02:06 PM	✓ ✗
101	Aaron Preston	aaronpreston@protusprint.com	✓	Has not yet signed in	Thursday, May 07 at 02:17 PM	✓ ✗
102	Robert Shannon	robertshannon@protusprint.com	✓	Saturday, May 07 at 05:33 PM	Thursday, May 07 at 11:49 PM	✓ ✗

3. **Managing a User:** Click the yellow notepad icon under the "Actions" column to edit user details (Name, Email Address, or Add/Remove Admin Privileges). Then click the "Edit User" button to confirm. You will receive a confirmation message below the "Users" section if successful.



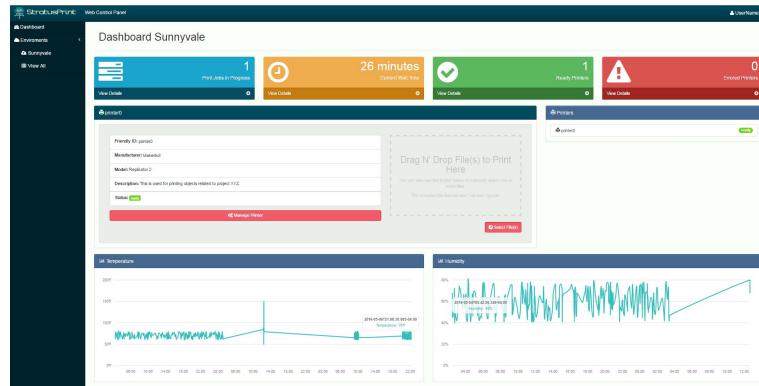
4.2 Set up - User

Contact your administrator and request a username and password. When they set up your account, you will receive an e-mail titled "Confirmation instructions". Click the link titled **Confirm my account**, then login using the username and password contained in the email. The password is case-sensitive.



Once you have entered your username and password correctly, you will see the dashboard page.

4.3 Dashboard Page



The Dashboard Page displays current print job information.

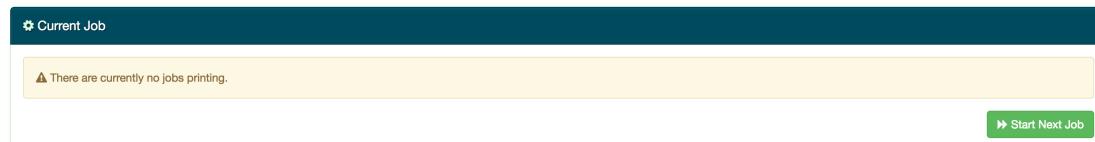
Along the top, you will see print jobs in progress, the wait time until the job is completed, the number of printers that are online, and the number of printers with errors. Click the **View Details** under each option to see more details, including the temperature and humidity of the room, and whether the door to the room is open or closed.

4.4 Starting a Print Job

To upload a file, either drag-and-drop the file into the box labeled **Drag N' Drop File(s)**, or click the **Select File** button, select the file you would like to print, and click the **open** button. Your file will be uploaded to the website.



If there is no current print job, the **Start next job** button will be available. If the print bed is cleaned off, and there are no previously printed objects on the bed, you can click this button to start the next job in the queue.



Managing Printers

TODO ADD manage-printer



Click the **Manage Printer** button at the bottom of the page. You will see information about the job in progress.

To start, pause, and cancel a job, click the corresponding buttons.

The Job Actions interface features a title 'Job Actions' with a thumbs-up icon. Below it are three buttons: a green 'Start' button, a blue 'Pause' button, and a red 'Cancel' button.

You can see previously issued commands in the bottom right of the screen.

Command	Status	Issued At	Issued By
	Errored	Thursday, May 05 at 07:27 PM	Bob Shannon
	Issued	Thursday, May 05 at 07:25 PM	Bob Shannon
	Errored	Thursday, May 05 at 07:22 PM	Bob Shannon
	Errored	Thursday, May 05 at 07:21 PM	Bob Shannon
	Issued	Thursday, May 05 at 07:20 PM	Bob Shannon
	Issued	Thursday, May 05 at 07:14 PM	Bob Shannon

First < 1 2 > Last

TODO What else do we need?

5 Troubleshooting

5.1 Nodes

How do I reset the nodes?

Turn the switch the the off position and unplug the node. Then plug the node back into the outlet and turn the switch to the on position.

Node is not connecting to the hub

1. Ensure the node has the correct wifi credentials. If the default is not working make sure the password hasn't been changed.
2. If the node seems to be connected and isn't communicating, reset the nodes.

Node is connected but no data is being sent from the sensors

Make sure the sensors are connected correctly. You can reference the wiring diagrams in this manual.

5.2 Webpage Issues

Webpage is not loading correctly

1. Try reloading the webpage.
2. Try closing the webpage, then reopen the webpage.
3. If both steps fail to fix your issue, log out of the website, then log back in.

5.3 Other Troubleshooting

If everything else fails?

Turn off the node and hub by unplugging both from the outlet, then plug both back into the outlet. The system is designed to restart itself and reconfigure automatically once set up.