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Φ ZEROTIER

creative.space and ZeroTier Integration Solves Storage Access Complexity for Remote Work Teams

Under routine post-production workflows, remote access to shared storage was challenging. Now with a pandemic, creatives require twenty-four-hour access and collaboration from any location. VPN, WAN, and Internet access to shared projects and files present technical challenges that can be difficult to overcome, especially for small production teams. creative.space has integrated ZeroTier's VPN and SD-WAN technology on its easy, reliable, and secure storage platform to empower the creative process.

Collaborative storage is the main hub connecting remote locations. Now, effortlessly control team and device access to your creative.space storage from anywhere and anytime. Create secure networks between on-premise, cloud, desktop, and mobile devices. Easily provision and de-provision remote access authorization for users, freelancers, and clients. We simplify your network stack by unifying VPNs, VLANs, and SD-WANs into one solution. The creative.space storage seamlessly interacts with ZeroTier's zero-trust networking software to provide scalable security, peer-to-peer (P2P) connections, and 256-bit end-to-end encryption.

What does this mean for your workflow? The bottom line is that you can quickly provide secure SMB (Network Share) and FTP remote access to folders and files on your shared storage. As an example, the SMB connection "smb://192.168.1.33/dailies", works the same as if you were onsite. Just be aware that you may need to adapt your projects to account for bandwidth speed and latency. We can assist you in implementing a proxy-based workflow. FTP is excellent for transferring multiple directories and files to and from your creative.space storage. Another advantage of FTP is the ability to continue transferring files even if the connection is lost. In case you accidentally lose your connection or have to reboot your computer, you don't have to worry about starting from the beginning again. You can pick up right from where you left off.

Securely authorize users and devices, and configure networks all within the creative.space web app. This integration saves multiple manual steps and needed IT security knowledge if only using the ZeroTier administration website. There are two levels of authorization for users to access the creative.space storage. The first is ZeroTier for encrypted network access.

[ZeroTier](#) offers a free Basic account for up to 50 network members and 1 admin. Their Professional account increases the numbers to 500 network members and 10 admins for \$49 per month. You can always start with their free account and then upgrade as your requirements change.

Recommended Local Network and Internet Gateway Configuration for ZeroTier:

These guidelines are consistent with the vast majority of typical deployments using commodity gateways and access points.

- Don't restrict outbound UDP traffic.
- Supporting either UPnP or NAT-PMP on your network can greatly improve performance by allowing ZeroTier endpoints to map external ports and avoid NAT traversal entirely.
- IPv6 is recommended and can greatly improve direct connection reliability if supported on both ends of a direct link. If present it should be implemented without NAT (NAT is wholly unnecessary with IPv6 and only adds complexity) and with a stateful firewall that permits bidirectional UDP conversations.
- Don't use "symmetric" NAT. Use "full cone" or "port restricted cone" NAT. Symmetric NAT is extremely hostile to peer-to-peer traffic and will degrade VoIP, video chat, games, WebRTC, and many other protocols as well as ZeroTier.
- No more than one layer of NAT should be present between ZeroTier endpoints and the Internet. Multiple layers of NAT introduce connection instability due to chaotic interactions between states and behaviors at different levels.
No Double NAT.
- NATs should have a port mapping or connection timeout no shorter than 60 seconds.
- Place no more than about 16,000 devices behind each NAT-managed external IP address to ensure that each device can map a sufficient number of ports.
- Switches and wireless access points should allow direct local traffic between local devices. Turn off any "local isolation" features. Some switches might allow finer grained control, and on these it would be sufficient to allow local UDP traffic to/from 9993 (or in general).

What ports does ZeroTier use?

It listens on three 3 UDP ports:

- 9993 - The default
- A random, high numbered port derived from your ZeroTier address
- A random, high numbered port for use with UPnP/NAT-PMP mappings

That means your *peers* could be listening on any port. To talk with them directly, you need to be able send to any port.

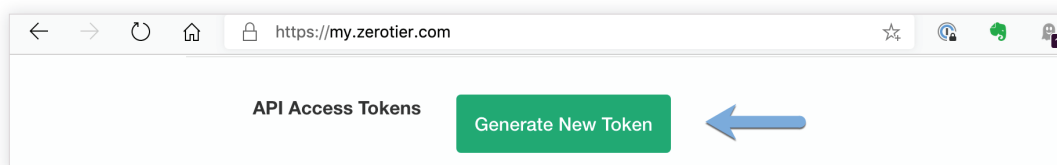
Below are the step-by-step procedures for setting up creative.space storage with ZeroTier. After the initial requirement to have an API Access Token, all subsequent configuration and approvals are accomplished within the creative.space web application.

First Step – Obtain a ZeroTier API Access Token

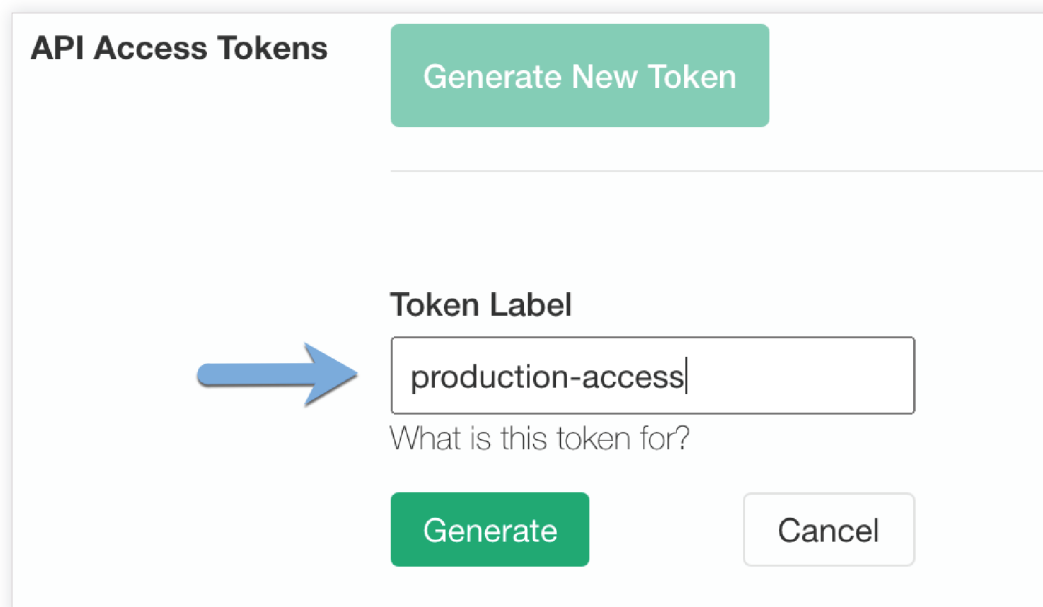
1. Create a ZeroTier account and log in to your account at my.zerotier.com. Select “Account” from the top menu bar.



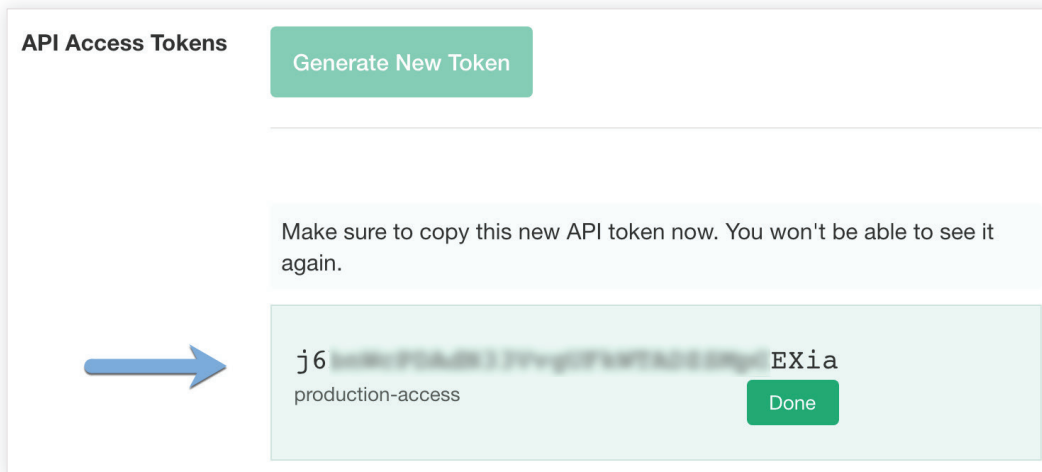
2. Scroll down to the API Access Tokens section. Click on the “New Token” button



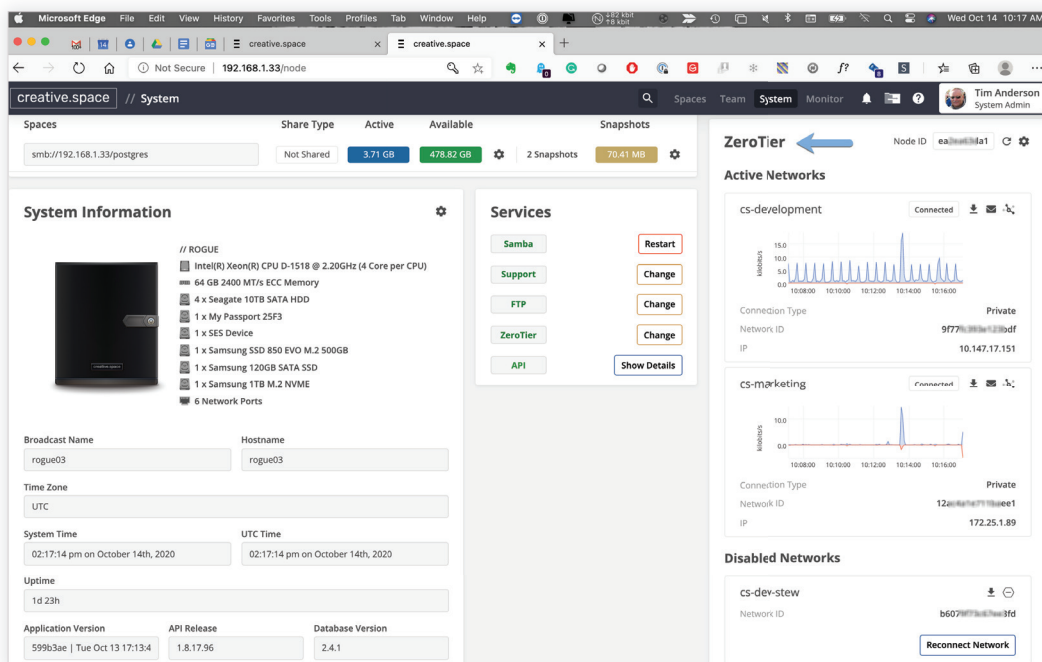
3. Type in a “Token Label” and then click the “Generate” button.



- A new token is created, so copy this to a secure location. Make sure to copy this new API token now. You won't be able to see it again.

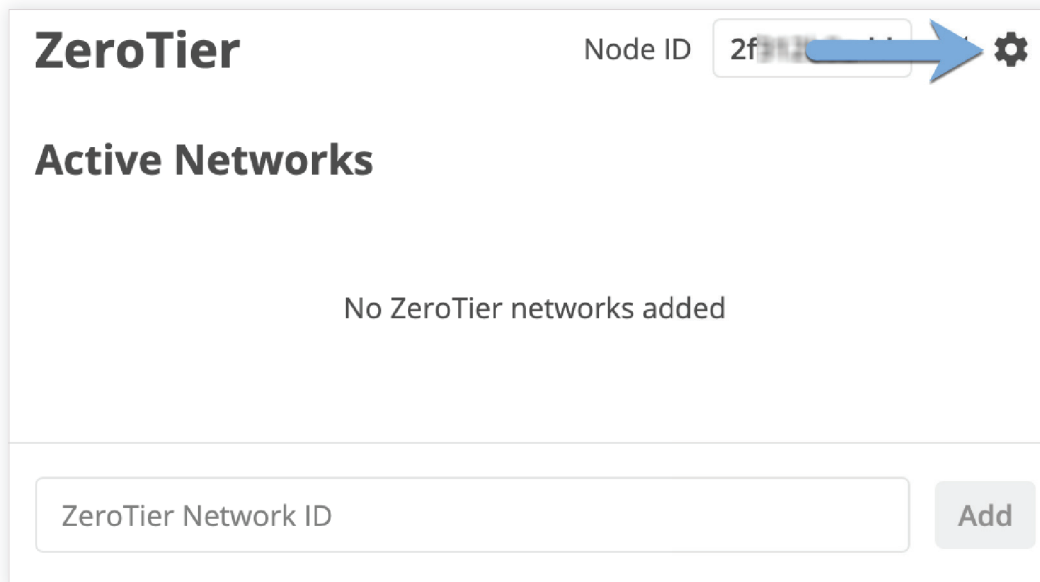


- This token is required to be entered on the “System” page of the creative.space web application. You only need to enter it one time. The API token allows an administrator to authorize users and devices securely, and configure networks all within the creative.space web app.

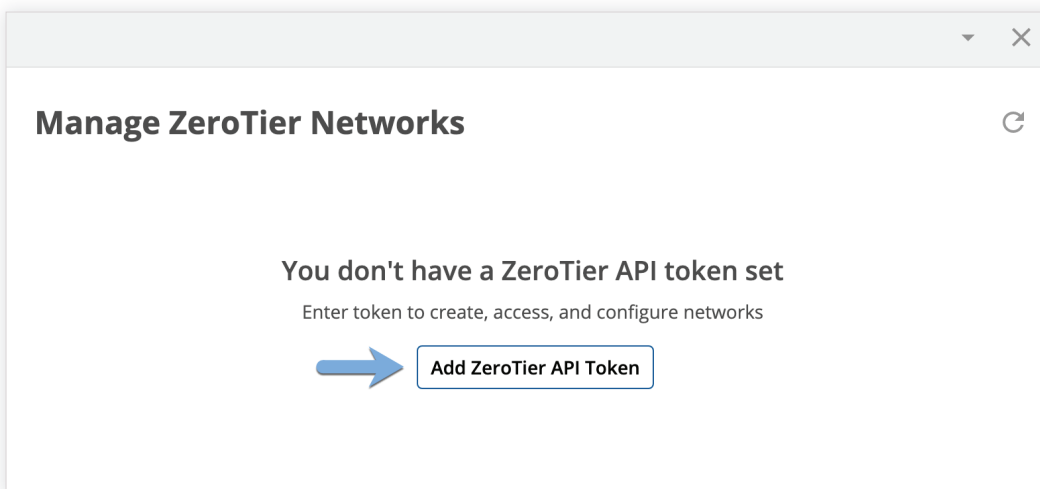


Next Steps – Configure ZeroTier on the creative.space web app

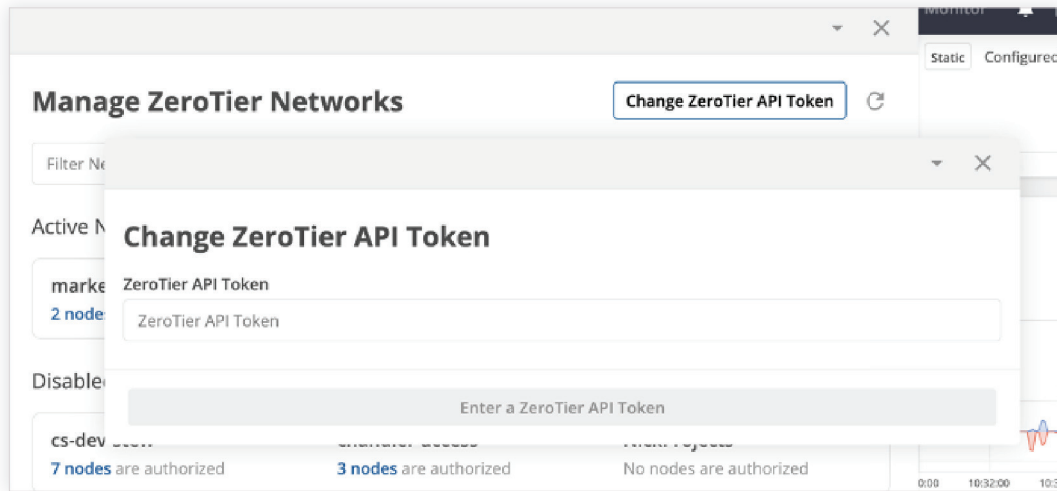
1. On the “System” Page scroll down to the “ZeroTier” network panel on the far right of the page and click on the “Gear” icon.



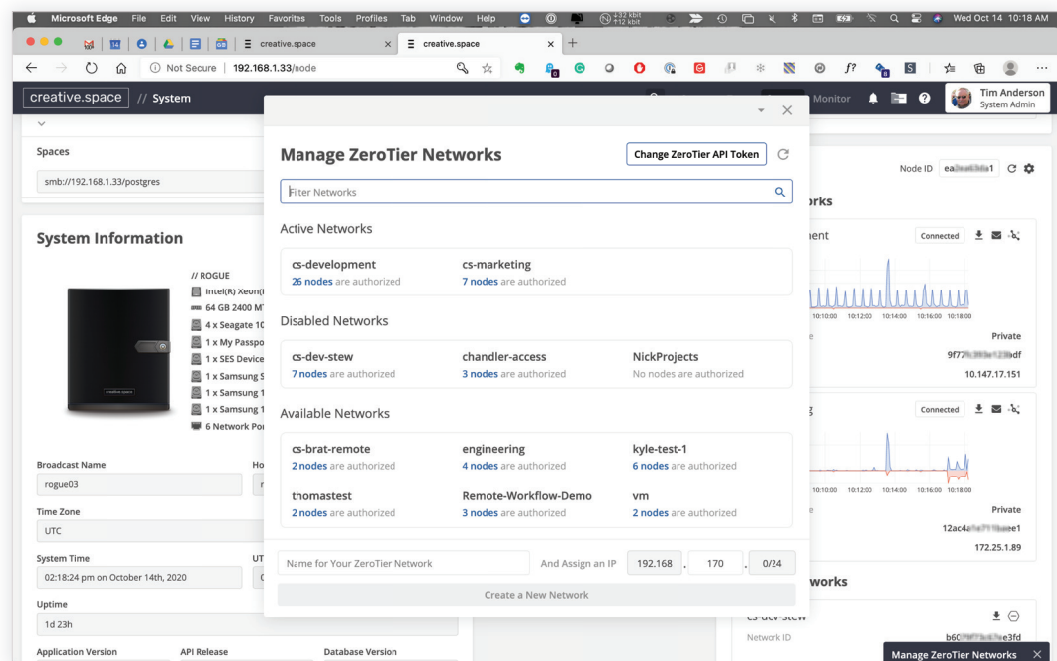
2. In the pop-up panel click on the “Add ZeroTier API Token” button.



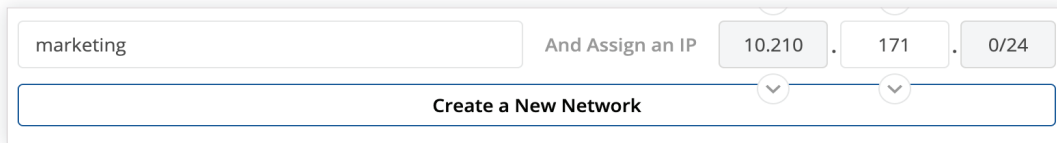
3. Now you will need to enter the “ZeroTier API Token” you created on my.zerotier.com from the “Account” page. Type it into the “ZeroTier API Token” text box and click the “Enter a ZeroTier API Token” button.



4. The “Manage ZeroTier Networks” panel will appear. It will be empty if there are no networks configured. If you have existing networks, you can manage them from this panel. It is divided by Active Networks, Disabled Networks, and Available Networks. This is based upon the current status of your creative.space storage within each network. It also displays the number of nodes authorized for each network. A “Node” is a device on the network. A user’s name is automatically added to the node description field. A user can have multiple devices such as a desktop, laptop, and iPad authorized on multiple networks, each with a separate “Node ID”.

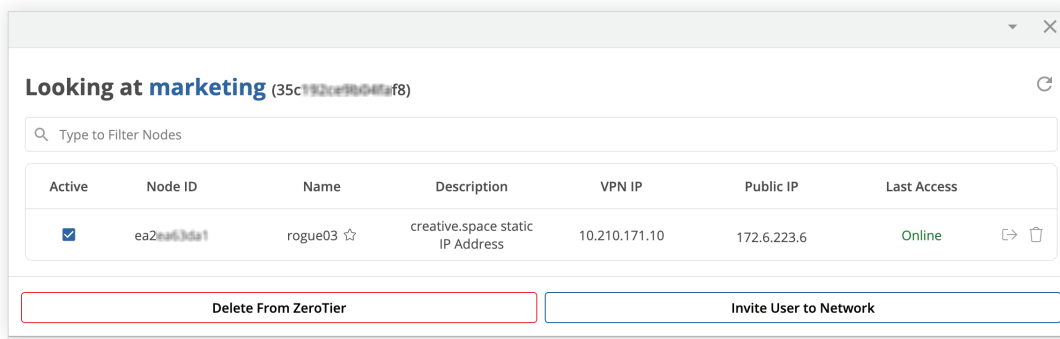


5. In the "Name for Your ZeroTier Network" text box, enter a name for your network. Select an IP range to assign for the network. Click on the "Create a New Network" button. The system automatically opens firewall ports to the storage, but it restricts access between user's devices for security purposes. The storage can be accessed from multiple networks. You can segregate user/device access into different networks for easier management.



The screenshot shows a web form for creating a new ZeroTier network. It includes a text input field containing the name "marketing". To the right, there is a section titled "And Assign an IP" with three dropdown menus showing "10.210", "171", and "0/24". Below these fields is a large button labeled "Create a New Network".

6. The next panel will appear and display the information for the newly created network. Your creative.space storage is automatically entered and approved.

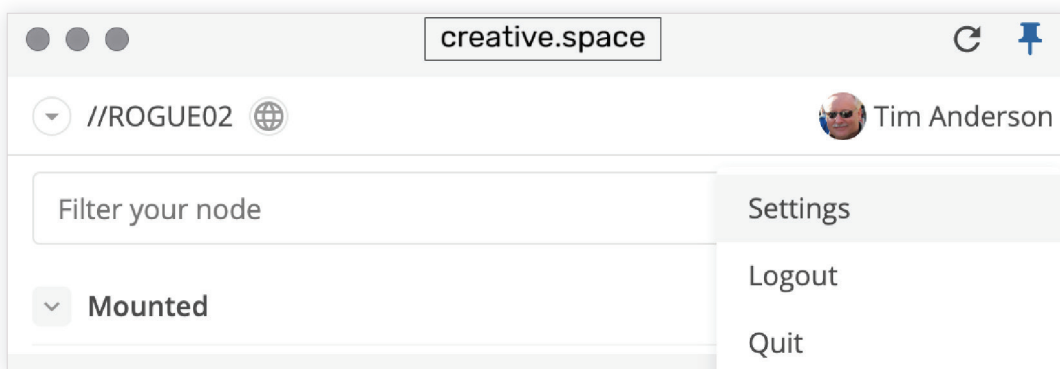


The screenshot shows a web panel titled "Looking at marketing (35c192ce9b04ff8)". It features a search bar with the placeholder "Type to Filter Nodes". Below the search bar is a table with the following columns: Active, Node ID, Name, Description, VPN IP, Public IP, and Last Access. The table contains one row with the following data: Active (checked), Node ID (ea2ea63da1), Name (rogue03), Description (creative.space static IP Address), VPN IP (10.210.171.10), Public IP (172.6.223.6), and Last Access (Online). At the bottom of the panel, there are two buttons: "Delete From ZeroTier" and "Invite User to Network".

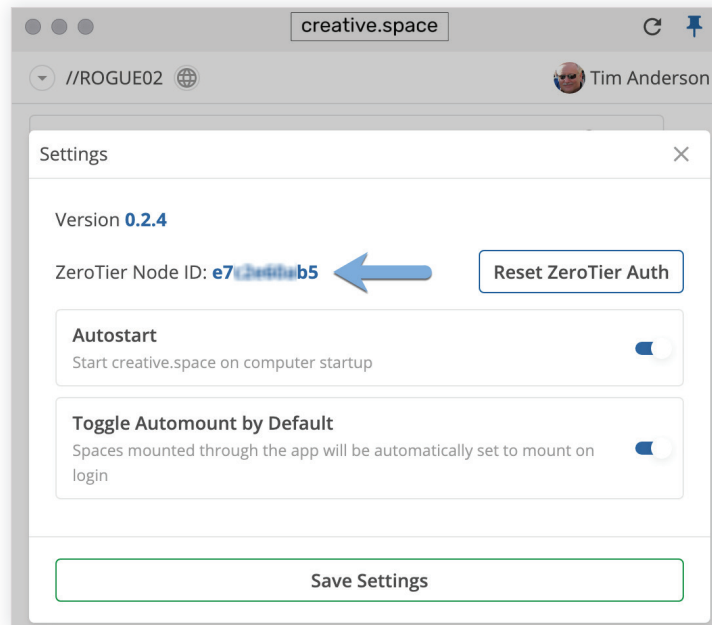
Active	Node ID	Name	Description	VPN IP	Public IP	Last Access
☒	ea2ea63da1	rogue03	creative.space static IP Address	10.210.171.10	172.6.223.6	Online

Client (Node) Setup – Install ZeroTier and creative.space Desktop Application

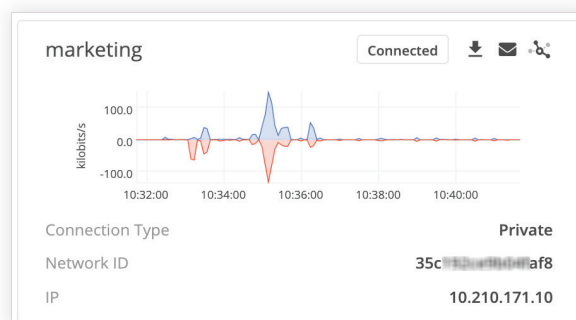
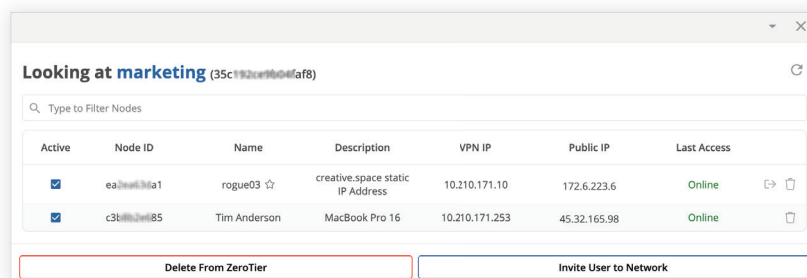
1. Download and install the [ZeroTier application](#) based upon your device. Make sure the creative.space application is also installed on either your Windows or Mac OS computer.
2. Open the creative.space desktop app and click on your name then select "Settings" from the menu.



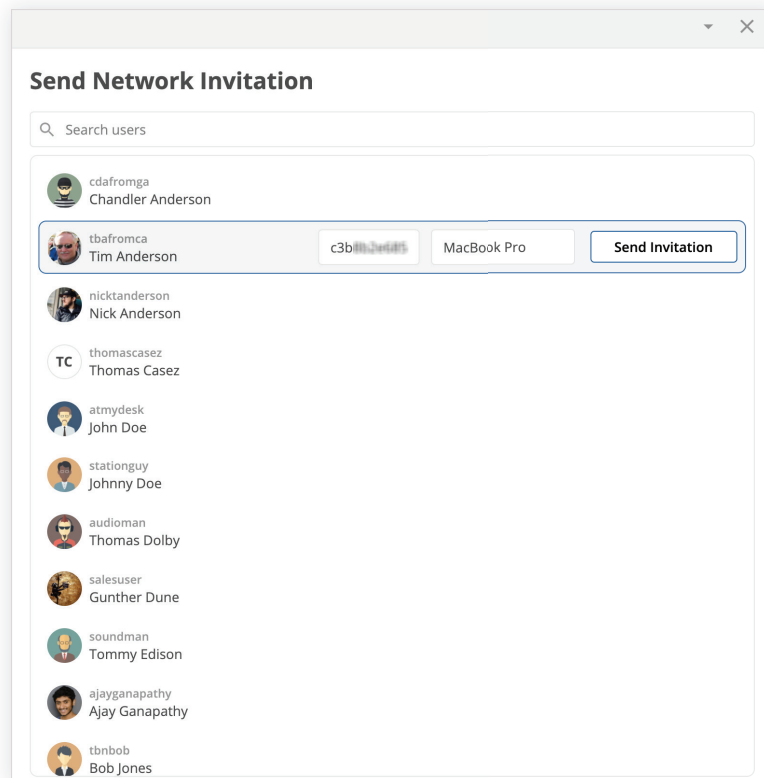
- The device's "ZeroTier Node ID" is displayed in the top left of the panel. Copy the ID number or have your users email it to you. This is required in the next step to add the node to the ZeroTier Network.



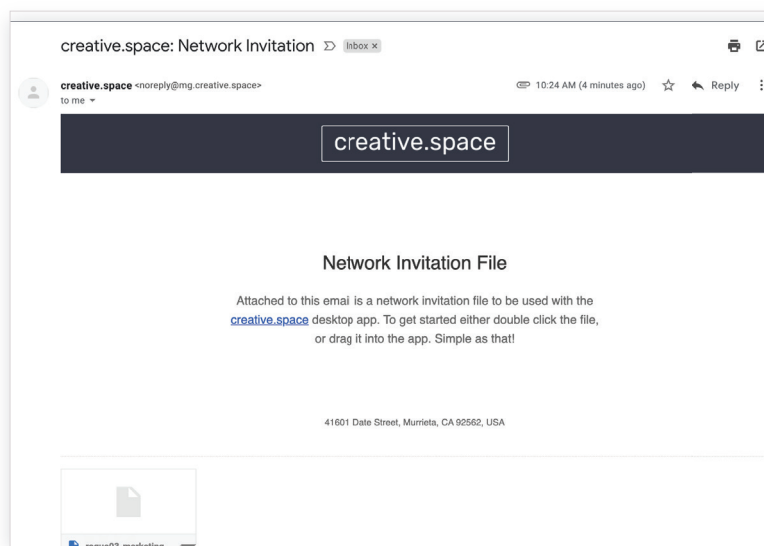
- From the creative.space web app "System" page, click on the "Gear" in the ZeroTier Network panel. Select the network that you want to add and authorize a new device with its "ZeroTier Node ID". Click the "Invite User to Network" button. You can also click on the "Mail" icon within the network panel.



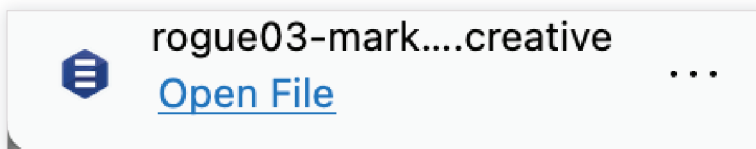
5. In the “Send Network Invitation” panel, select a user and enter their “ZeroTier Node ID” and a “Device Description”. Click the “Send Invitation” button. A Network Invitation email is automatically sent to the user, which includes a network configuration file.



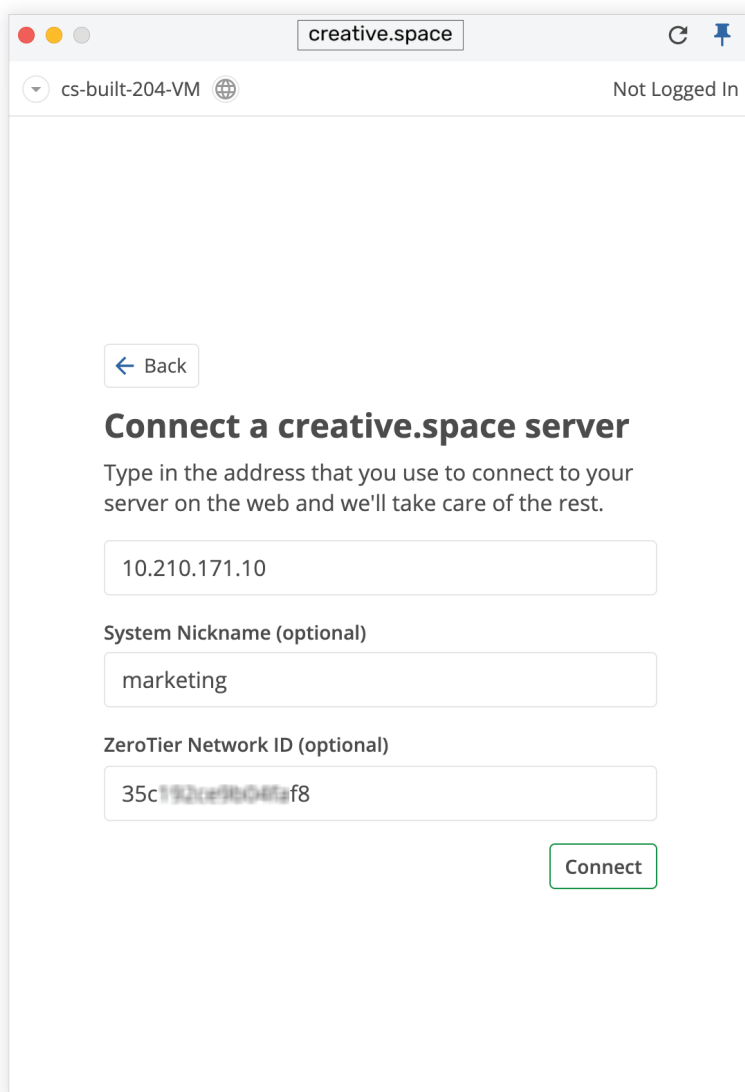
6. Below is a screenshot of the Network Invitation email. The user should click to download the configuration file.



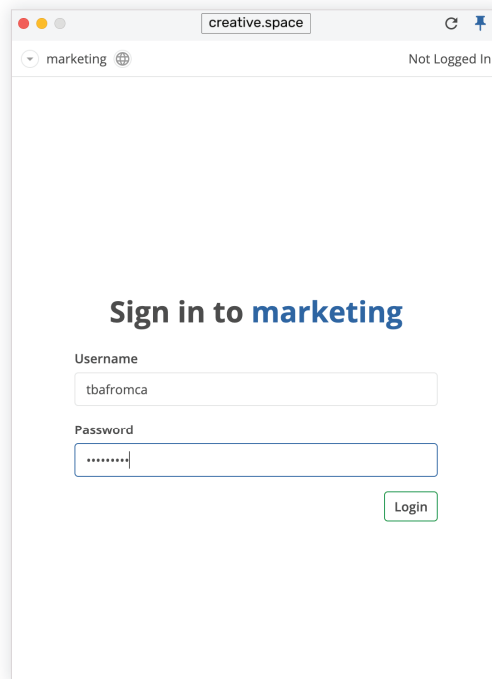
- Once downloaded, click to open the configuration file in the browser, Finder, or Explorer. The file can also be directly drag-and-dropped onto the creative.space desktop app.



- The configuration file will open in the desktop app and automatically fill in the IP address of the storage, system nickname, and ZeroTier Network ID. Click the "Connect" button.

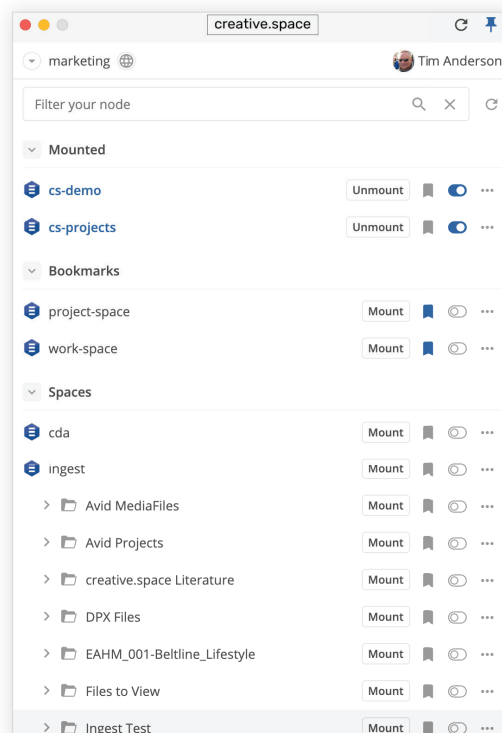


9. The user will need to enter their Username and Password. This has been assigned to them through the creative.space web app on the "Team" page.

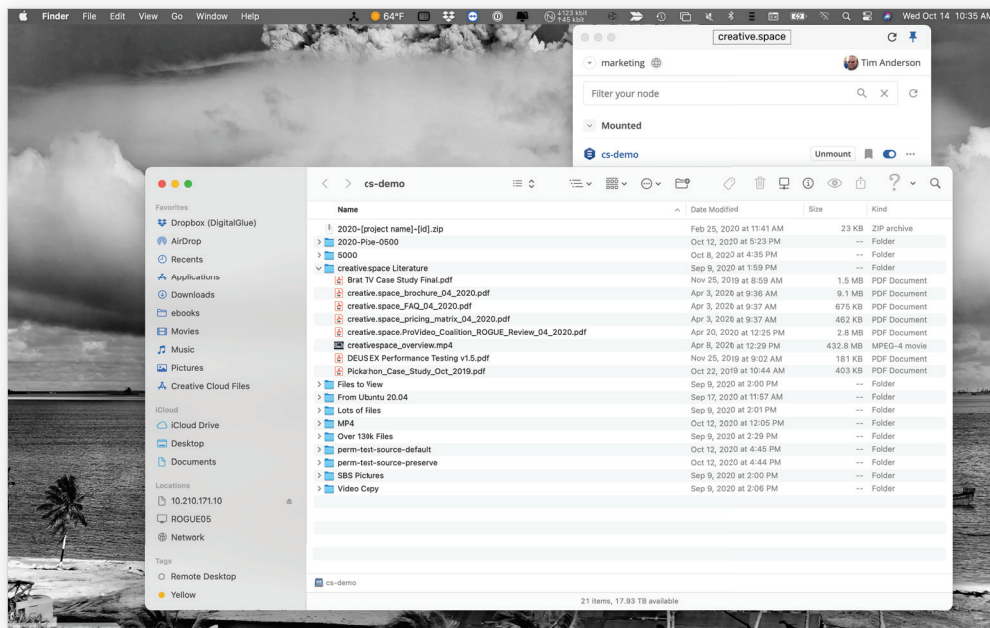


The screenshot shows a web browser window with the address bar set to 'creative.space'. The page title is 'marketing' and the user status is 'Not Logged In'. The main heading is 'Sign in to marketing'. Below this, there are two input fields: 'Username' with the value 'tbafromca' and 'Password' with masked characters '*****'. A 'Login' button is positioned to the right of the password field.

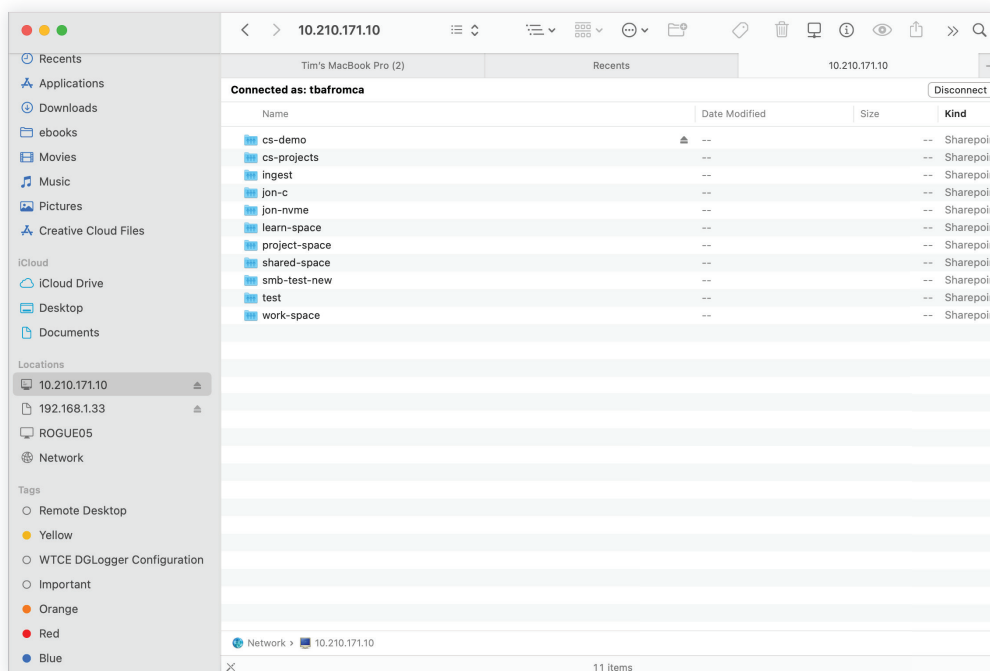
10. You will be logged into the storage and can now access Spaces and Folders.



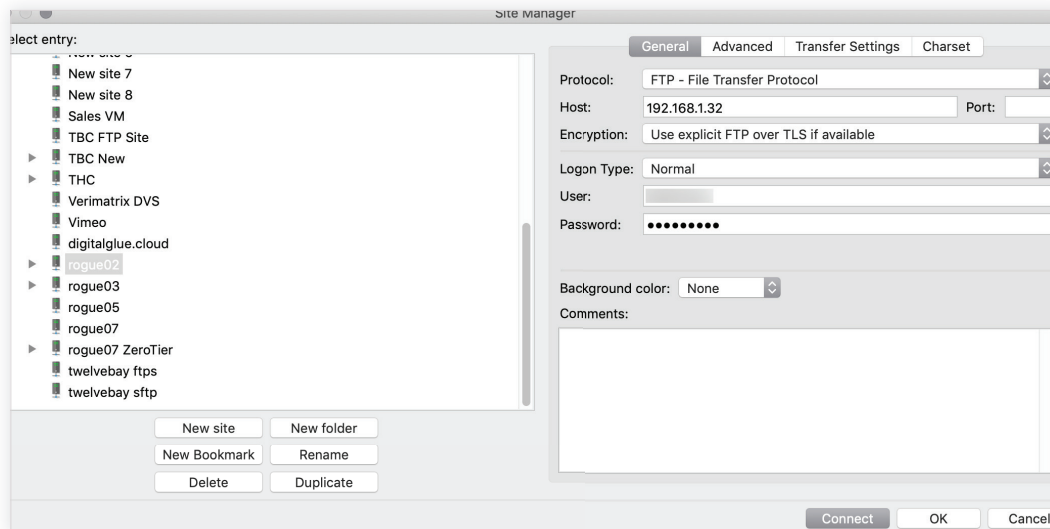
11. In the desktop app click on the three dots (...) next to the Space or Folder name to open in Finder or Explorer.



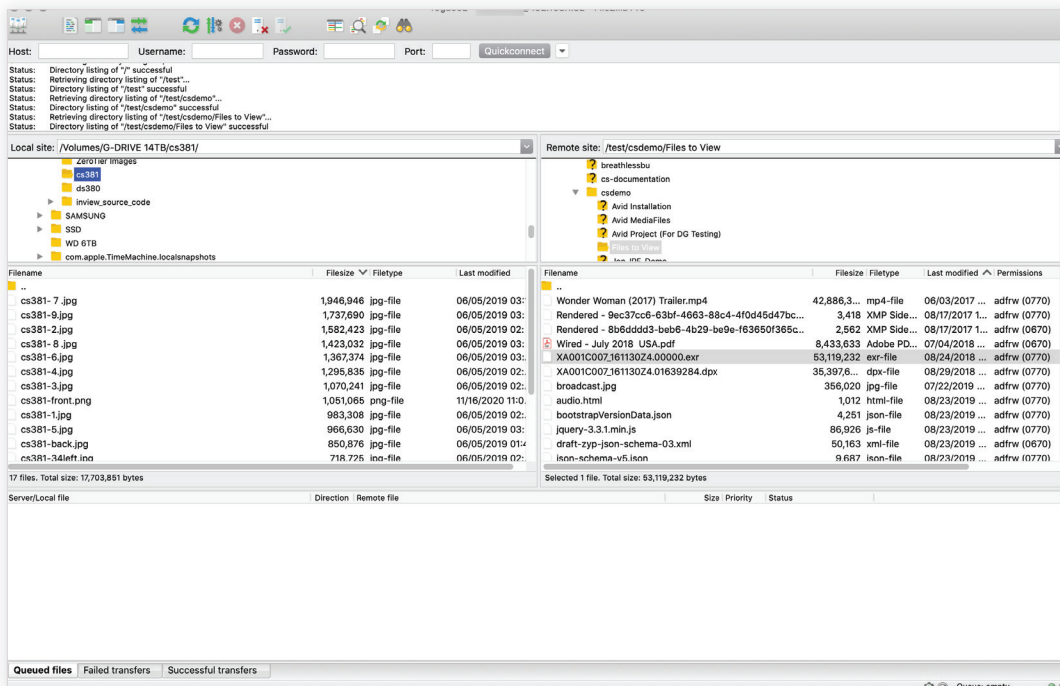
12. In Finder or Explorer, you will be able to see the IP address of the storage under the Network Connections or Locations tree. The Spaces you are authorized to access with be visible and accessible.



13. You can also access the storage with an FTP application. Enter the IP address of the storage in the "Host" text box and fill out your "User" Name and "Password".

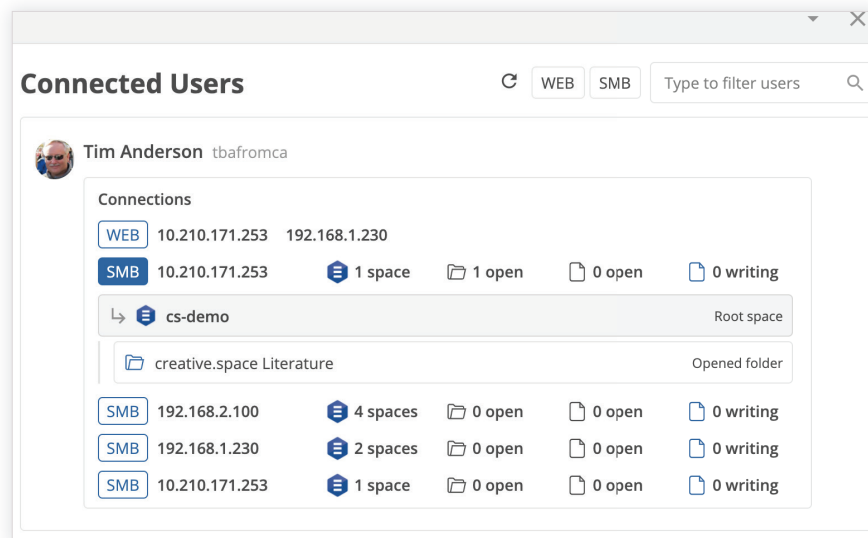


14. Once connected, you will be able to upload and download folders and files. For large or multiple files, this is a better method than with SMB through Finder or Explorer.

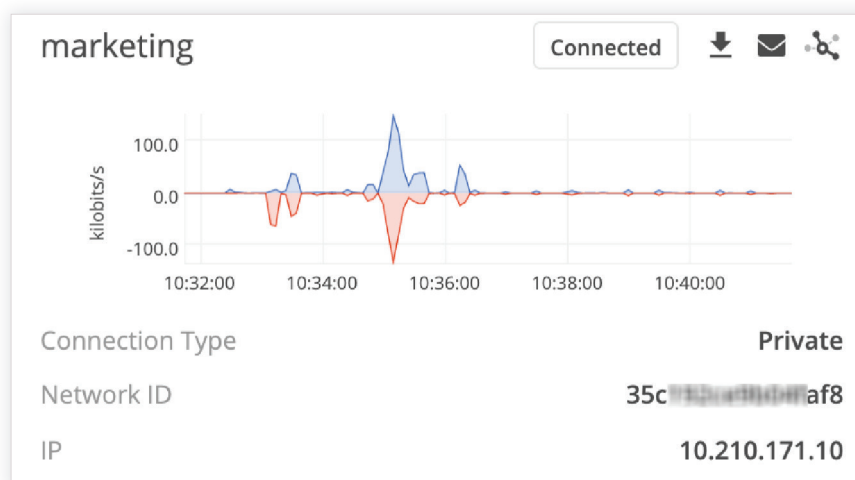


Additional Configuration and Monitoring – “System” Page

- Click the “View Connected Users” button in the Connected Users Panel. It will display connected users, and you can monitor what Spaces, Folders, and Files are being accessed. This is great for troubleshooting or looking for detecting suspicious activity. If a user’s credentials are being used from multiple IP locations, then they may be compromised or shared.



- In the ZeroTier Network panel, you can view Active and Disabled networks. For “Active Networks,” you have a graphical chart displaying network bandwidth speed and activity. The “Connection Type” Private or Public, “Network ID”, and IP address of the storage is shown.



- “Disabled Networks” display networks that the storage has been disabled on. Click the “Reconnect Network” button to make live and reachable again.

Disabled Networks

NickProjects

Network ID

1d71[REDACTED]c35

Reconnect Network

cs-dev-stew

Network ID

b60[REDACTED]e3fd

Reconnect Network

chandler-access

Network ID

c7c8[REDACTED]3f59

Reconnect Network

- Through the creative.space web app, you can only create “Private” networks. If you wish to create a “Public” network not requiring node authorization, it must be done on the ZeroTier administration website. If a network is configured for “Public”, the panel will display it with a red border and warning message.

NickProjects

Connected

⬇️ ✉️ 🌐

For security reasons, we recommend that you only connect to Private ZeroTier networks.

kilobits/s



Connection Type

Public

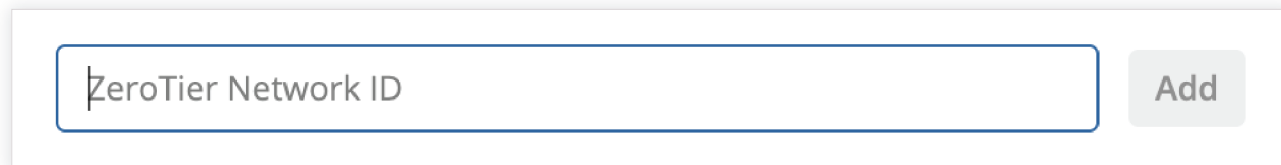
Network ID

1d71[REDACTED]35

IP

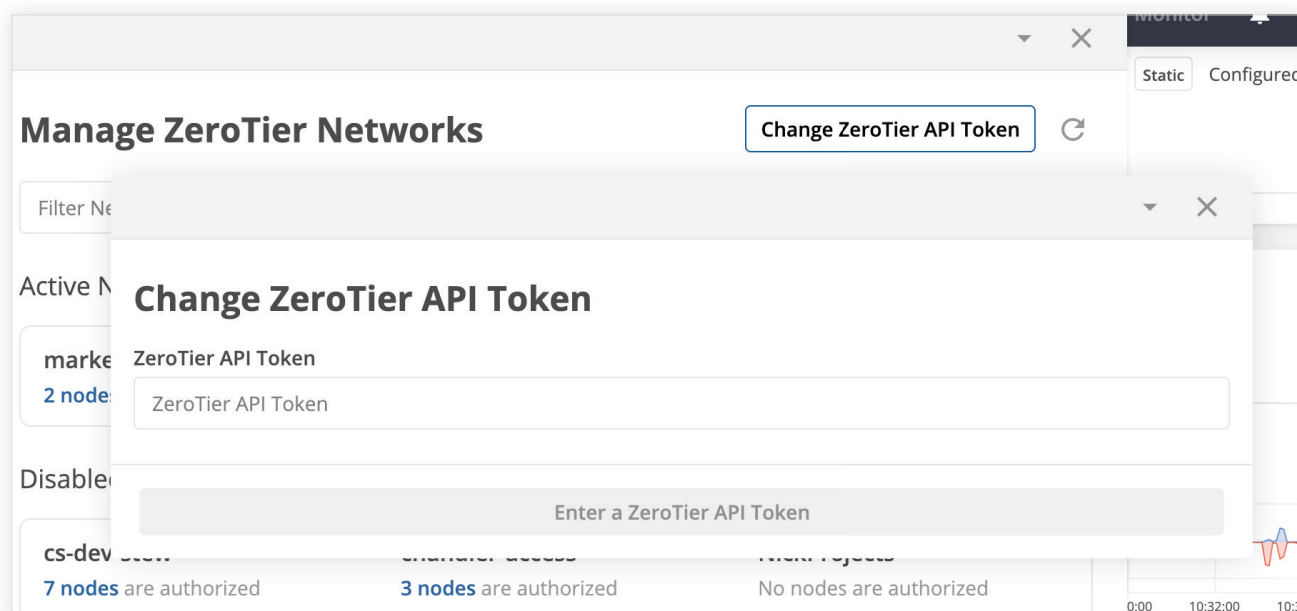
172.30.189.45

- At the bottom of the ZeroTier panel is a section to add a ZeroTier Network ID that is not on your ZeroTier account. Once you type in the Network ID, click the “Add” button. The Network will automatically be added, but you will need to add the storage Node ID and approve it manually on the ZeroTier administration website.

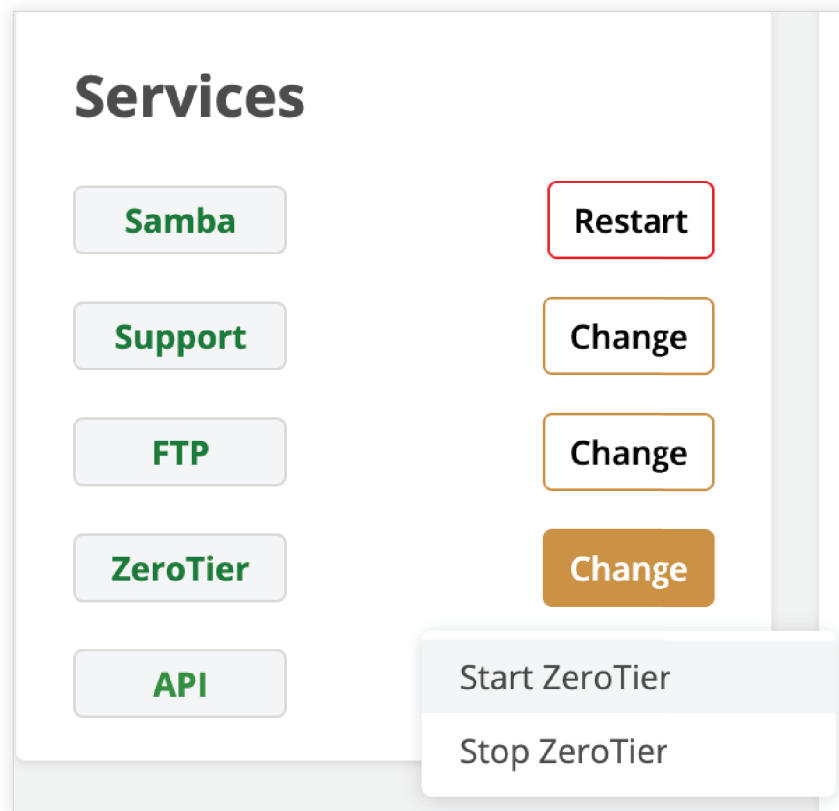


A screenshot of a web interface showing a text input field labeled "ZeroTier Network ID" with a cursor inside. To the right of the input field is a grey button labeled "Add".

- On the “Manage ZeroTier Networks” panel, there is a “Change ZeroTier API Token” button. Click this to change the API token if needed.



- In the “Services” panel, you can Start and Stop the ZeroTier service if needed. Click on the “Change” button and select “Start ZeroTier” or “Stop ZeroTier”.



Hopefully, this creative.space integration with ZeroTier provides your team with a cost-effective and frictionless solution to access remote storage. If you have any questions or comments, please email support@creative.space.