

Top Client

Data	Average bps	Max bps
2.98 GB	107.53 kbps	
489.02 MB	243.02 kbps	
11.38 MB		
3.57 MB		
1.27 MB		
1.25 MB		
18.72 kB		
18.36 kB		
4.05 kB	658.00 bps	
3.57 kB	988.00 bps	



IOTA 1G & 10G

USER MANUAL

PROFITAP

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[*support@profitap.com*](mailto:support@profitap.com)

For the latest documentation and software, visit our Resource Center:

[*https://www.profitap.com/resource-center/*](https://www.profitap.com/resource-center/)

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PRODUCT OVERVIEW

1.1 HARDWARE OVERVIEW

IOTA is a multifunctional passive network probe with integrated traffic capture and analysis capabilities. Designed as a secure and flexible analysis solution, IOTA is a great asset to get access and visibility into industrial or enterprise level networks.

Profitap IOTA is used by network engineers and IT analysts to get a fast and clear overview of the network traffic. This means a comprehensive analysis can be performed quickly, helping engineers get to the root cause in a matter of clicks.

The device can be deployed as a dedicated probe, or programmed for autonomous analysis, eliminating the need of an on-site network expert.

Currently, the lineup consists of the IOTA 1G, and IOTA 10G.

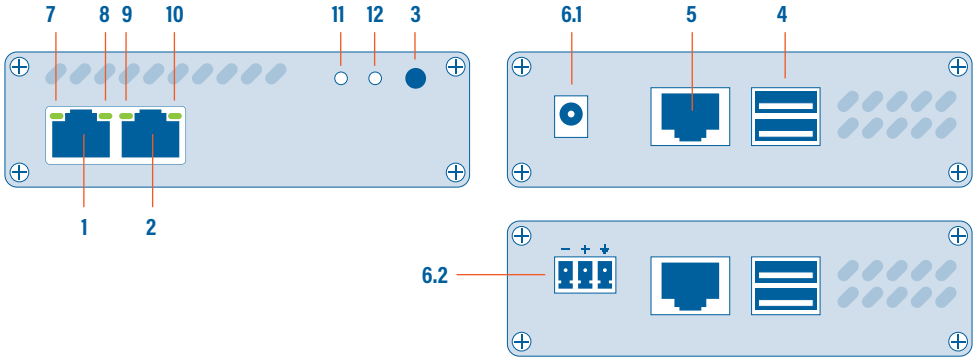


1.2 SPECIFICATIONS

INLINE MODE		Yes
INLINE LATENCY	IOTA 1G	1G: 400 ns — 100M: 660 ns — 10M: 6600 ns
	IOTA 10G	500 ns
INLINE JITTER		20 ns
DUAL SPAN INPUTS MODE		Yes
FAILSAFE	IOTA 1G	Yes
	IOTA 10G	No
CAPTURE PERFORMANCE	IOTA 1G	2 Gbps / 3.2 Mpps
	IOTA 10G	3 Gbps / 5 Mpps
PACKET PROCESSOR	IOTA 1G	Yes, 2 Gbps / 3.2 Mpps
	IOTA 10G	Yes, 20 Gbps / 32 Mpps
HARDWARE TIMESTAMPING	IOTA 1G	Yes: 8 ns, NTP synchronized
	IOTA 10G	1G: 8 ns, NTP synchronized 10G: 6.4 ns, NTP synchronized
INTERNAL STORAGE		1 TB
POWER INPUTS	12V MODELS	12 VDC
		PoE (management RJ45)
	24V MODELS	24–48 VDC
		PoE (management RJ45)
POWER CONSUMPTION	IOTA 1G	12 W
	IOTA 10G	15 W
MANAGEMENT	Interfaces	10/100/1000 Ethernet
		2 x USB 3.0
	Services	HTTPS (server), UPnP/VPN

1.3 INTERFACES & LED BEHAVIOR

IOTA 1G Interface



1, 2	Ethernet port A, B	5	RJ45 Management port (PoE)
3	START/STOP/RESET button	6.1	12 VDC power input
4	2 x USB 3.0 port type A	6.2	24-48 VDC power input
		7, 8, 9, 10, 11, 12	Activity LEDs

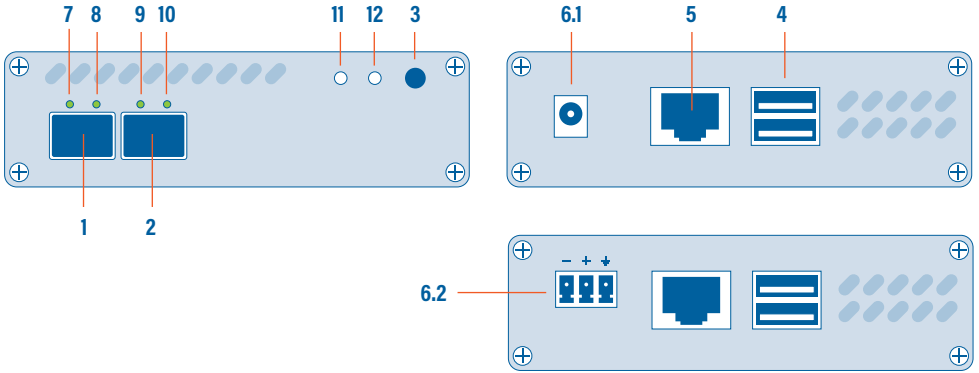
IOTA 1G LED Behavior

LED NUMBER	STATE	MEANING
LED 7 LED 10	ON	The port is linked.
	Blinking	The port is linked and has RX/TX activity (traffic is passing through).
LED 8	ON	IOTA 1G is operating at 10 Mbps speed.
	Blinking	IOTA 1G is initializing.
LED 9	ON	IOTA 1G is operating at 100 Mbps speed.
	Blinking	IOTA 1G firmware is corrupted.

<i>LED NUMBER</i>	<i>STATE</i>	<i>MEANING</i>
LED 8 + LED 9	ON	IOTA 1G is operating at 1 Gbps speed.
	Blinking	The port is linked and has RX/TX activity (traffic is passing through).
	Alternating Blinking	IOTA 1G cannot find a common speed between the connected devices.

<i>LED 11 STATE</i>		<i>LED 12 STATE</i>	<i>MEANING</i>
Orange Blink	+	OFF	Booting
Green	+	Green	Running
Green	+	Green Blink	Capturing
Green	+	Orange Blink	Capturing / Warning
Green	+	Red	Disk Full
Orange Green blink	+	Orange Green Blink	Updating
Red Blink	+	Red Blink	Hardware Failure
Orange Blink	+	Orange Blink	Factory Reset
Green Blink	+	OFF	Shutting down
OFF	+	OFF	Shutdown completed

IOTA 10G Interface



1, 2 SFP/SFP+ port A and port B, accepting both optical and copper connections.

3 START/STOP/RESET button

4 2 x USB 3.0 port type A

5 RJ45 Management port (PoE)

6.1 12 VDC power input

6.2 24-48 VDC power input

7, 8, 9, 10, 11, 12 Activity LEDs

IOTA 10G LED Behavior

LED COLOR	7+8 or 9+10	8 or 10	7+8+9+10
ORANGE	NO SFP MODULE PRESENT OR DETECTED	-	ORANGE
STEADY GREEN	-	SPAN MODE, LINK UP	IN-LINE MODE, LINK UP
SLOW BLINKING GREEN	NO LINK	-	NO LINK
FAST BLINKING GREEN	-	SPAN MODE, TRAFFIC ACTIVITY	IN-LINE MODE, TRAFFIC ACTIVITY
RED	CONNECT ADDITIONAL POWER	-	CONNECT ADDITIONAL POWER

<i>LED 11 STATE</i>		<i>LED 12 STATE</i>	<i>MEANING</i>
Orange Blink	+	OFF	Booting
Green	+	Green	Running
Green	+	Green Blink	Capturing
Green	+	Orange Blink	Capturing / Warning
Green	+	Red	Disk Full
Orange Green blink	+	Orange Green Blink	Updating
Red Blink	+	Red Blink	Hardware Failure
Orange Blink	+	Orange Blink	Factory Reset
Green Blink	+	OFF	Shutting down
OFF	+	OFF	Shutdown completed

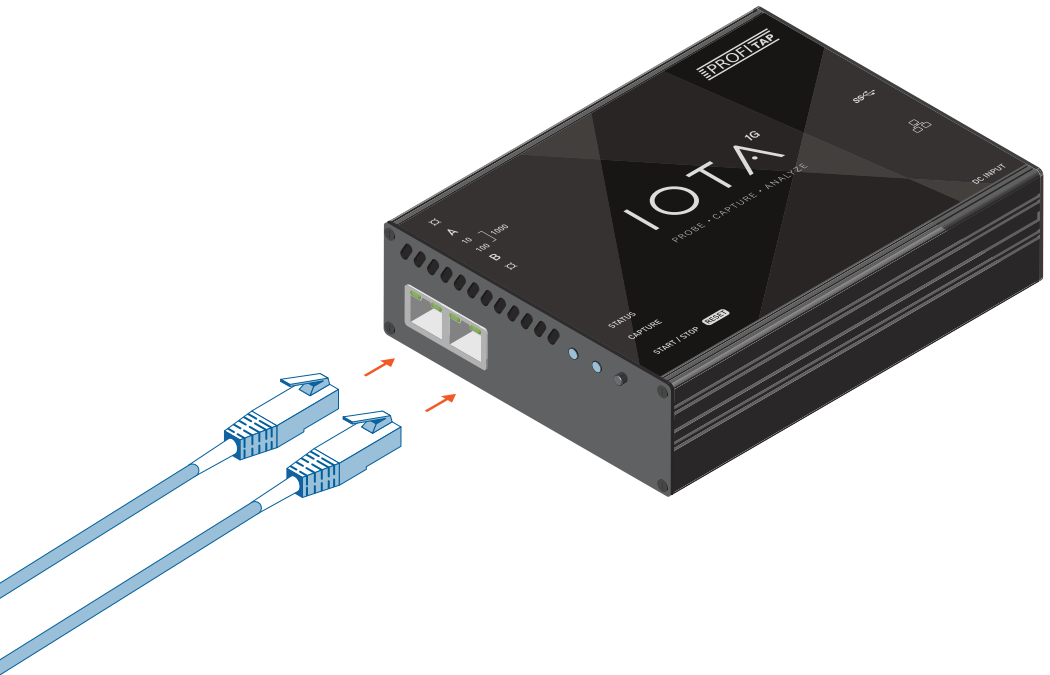
GETTING STARTED

2.1 DEPLOYING THE IOTA

IOTA 1G

Insert Ethernet cables of the line you want to monitor into the RJ45 port A and B of the IOTA, using category 5 UTP cables, rated for Gigabit operations.

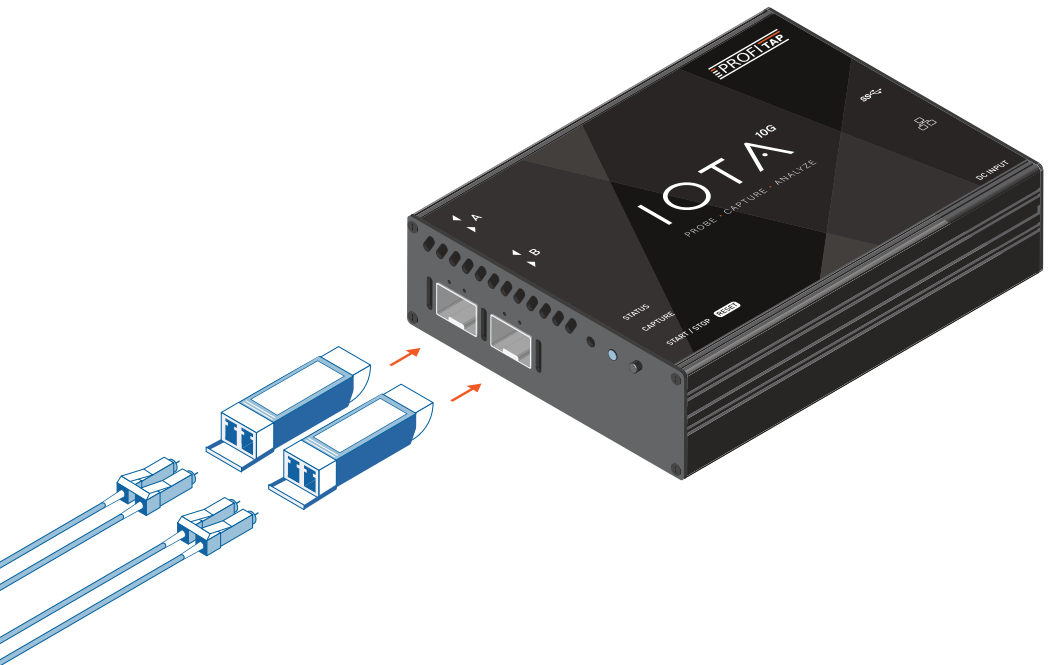
- ▶ **Note:** When deployed in-line, IOTA must always be connected to the network first, before powering the device to make full use of the failsafe capabilities. This step is critical to verify the availability of the inline path in case of failover.



IOTA 10G

Carefully insert both SFP modules, making sure the retention mechanism is closed. Insert the LC optical fiber cables of the line you want to monitor in the SFP modules, making sure to match the Tx-Rx / Tx-Rx signal direction at the other end.

- ▶ **Note:** IOTA 10G does not have an integrated failsafe circuit. Thus, to use the device in-line, an external TAP must be employed in order to implement failsafe monitoring.



2.2 POWERING THE DEVICE

Connect the 12V 2.5A DC power supply, or connect 24-48VDC input to power source, depending on your IOTA model. Alternatively, power the device over the management port with PoE. The IOTA will boot automatically after power connection is established. You can follow its status by observing the activity LEDs.

- ▶ **Note:** Initial boot may take some time to complete. When both the Status and Capture LEDs are green, IOTA has completed the boot sequence.

Once powered the in-line failover circuit is disabled, placing the device actively in-line.

2.3 ACCESS IOTA OVER NETWORK

To access the IOTA over the network, you can connect to the HTTP interface by browsing to the device IP of your IOTA, including port number.

The full URL should be: `https://x.x.x.x:3000`

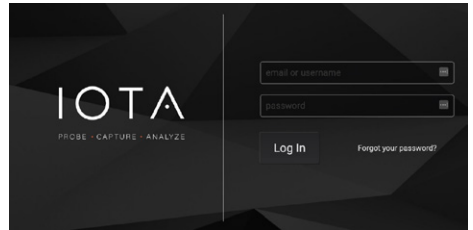
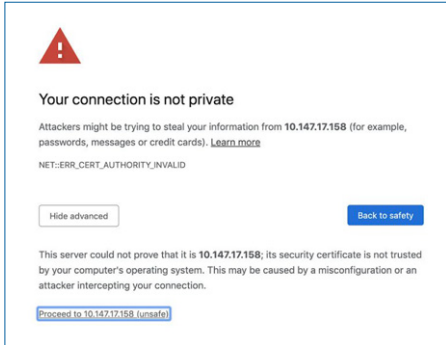
DHCP mode is enabled by default.

To login, use the following initial credentials:

Default name: ***admin***

Default Password: ***admin***

- ▶ **Note:** In case your browser displays a 'Your connection is not private' warning, click on **advanced > proceed to...** URL at the bottom to proceed to the IOTA login page.



2.4 IOTA CONFIGURATION

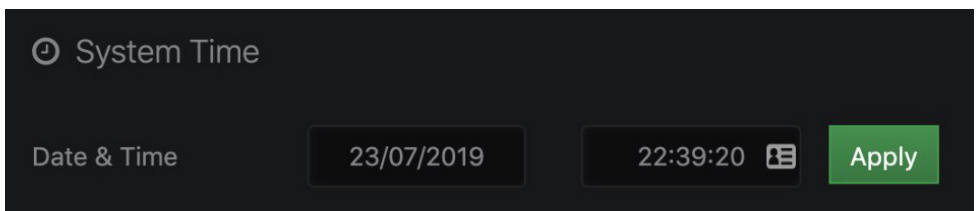
System Time

NTP service is enabled by default, if Internet access is provided to IOTA, no extra configuration is required. However, system time can manually be adjusted.

The system time is used by:

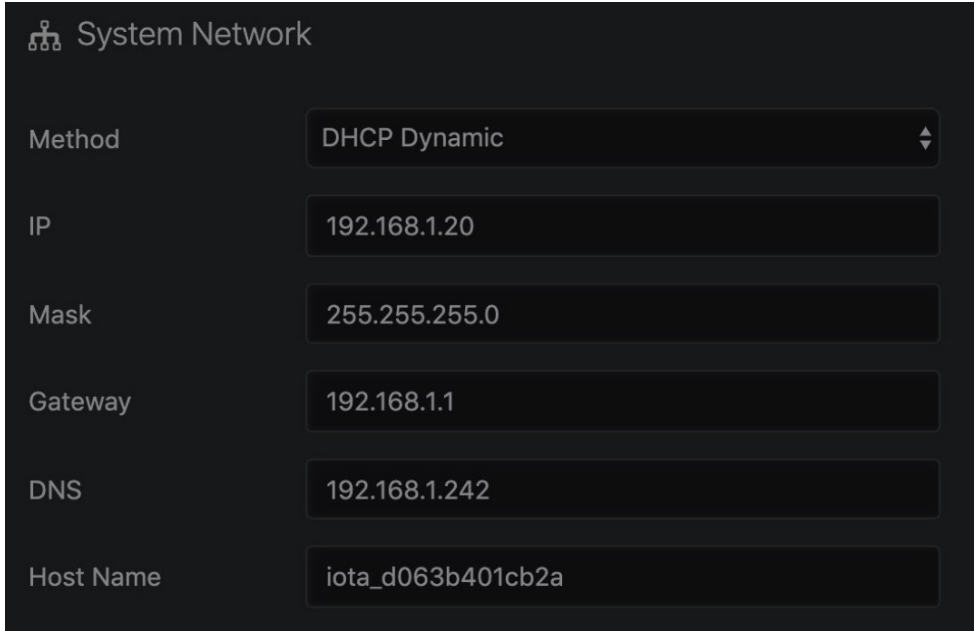
- the embed OS,
- the capture interface to constantly discipline the hardware timestamp counter.

Changing time may require a restart of the capture interface to take effect.



System Network

Navigate to IOTA Settings / Configuration to change default network settings like IP, Mask, Gateway, DNS and Host Name.

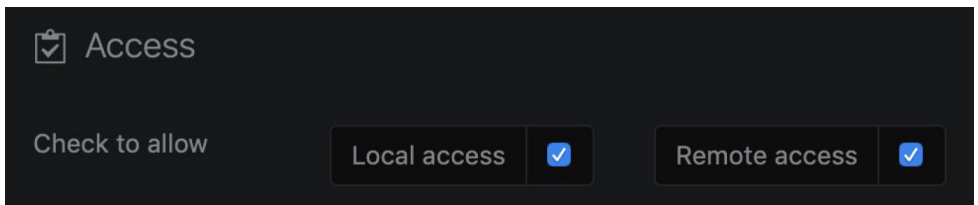


The screenshot shows a dark-themed configuration window titled "System Network" with a network icon. It contains several input fields for network settings:

Field	Value
Method	DHCP Dynamic
IP	192.168.1.20
Mask	255.255.255.0
Gateway	192.168.1.1
DNS	192.168.1.242
Host Name	iota_d063b401cb2a

Access / Internal Firewall

Used to limit access from local clients (LAN subnetwork) and/or remote clients (WAN, ZeroTier).

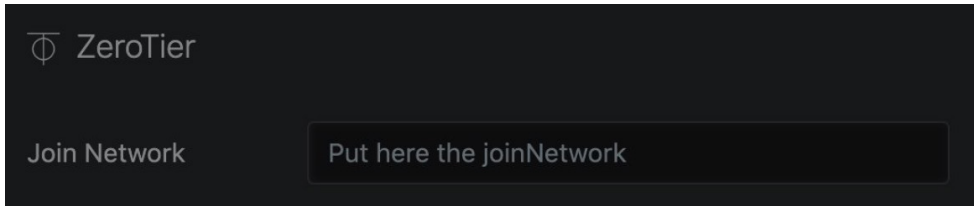


The screenshot shows a dark-themed configuration window titled "Access" with a checkmark icon. It contains two toggle switches for access control:

Check to allow	Local access	Remote access
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

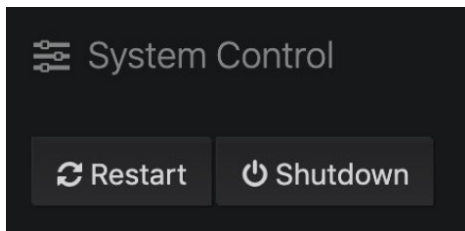
ZeroTier

ZeroTier provides an easy way to remotely access the device via a P2P VPN and manage virtual networks on a cloud application. (more information: www.zerotier.com)



System Control

Remotely restart or turn off your IOTA by pressing the 'Restart' or 'Shutdown' button.



CAPTURE GUIDE

3.1 CAPTURE CONTROL

The way IOTA captures network traffic can be controlled in **Capture > Capture Control**. There are three main capture behaviors that can be distinguished:

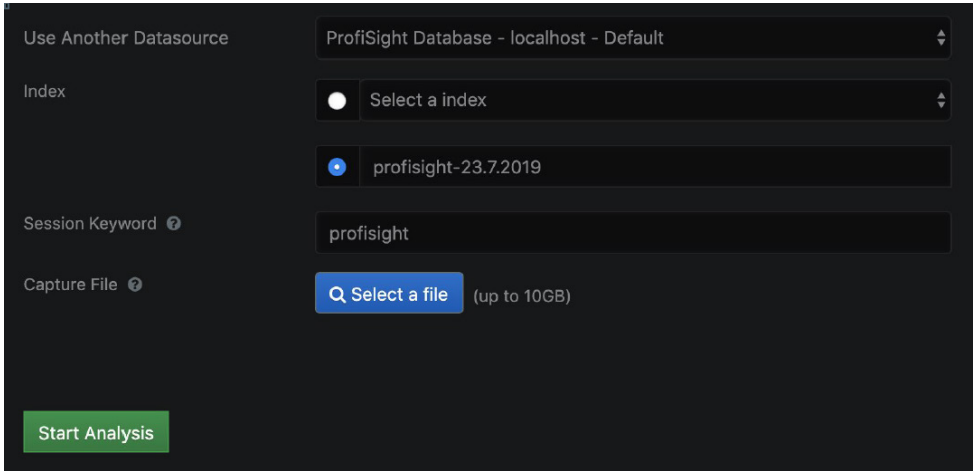
1. Capture defined size and stop
2. Capture defined duration and stop
3. Capture continuously

The Capture Control menu gives you the following options to control the capture behavior:

- Keep captured raw data to be able to export PCAP later
- Specify the number of files. 0 represents unlimited files.
- Set file time length in seconds
- Set Max file size in MB
- Select folder where capture files will be placed

► **Note:** Capture files are automatically analyzed and indexed. Once analyzed 'keep file' option determines whether or not the trace file is conserved in the data vault.

If 'keep file' is enabled, it's possible to retrieve the trace file, a part of it or a filtered copy of it from the dashboards. If 'keep file' is disabled, the dashboards displays indexed data only. It's not possible to retrieve the original trace file.

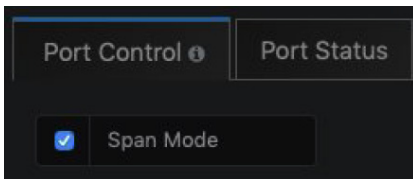


3.2 INTERFACE CONFIGURATION

The Interface Configuration screen gives you an overview of connected devices, Capture Statistics and Device information. To change interface settings, several tabs are available:

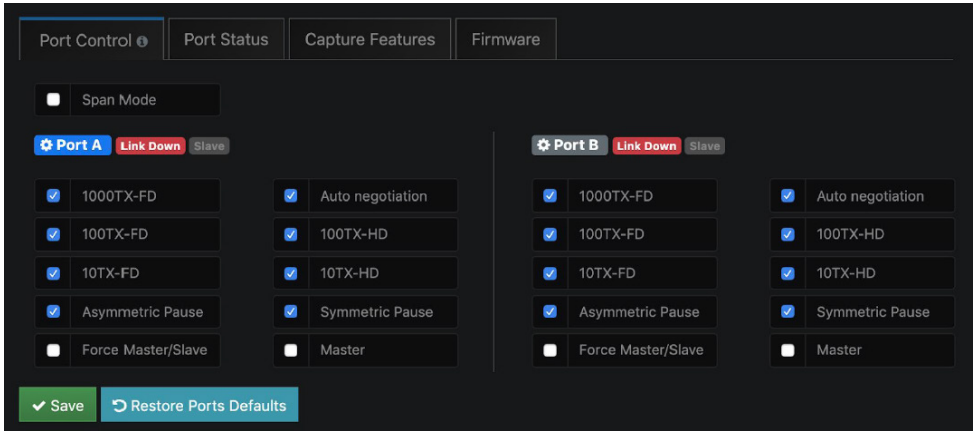
Port Control

If IOTA is intended to be used in-line, the suitable configuration must be set. 'INLINE mode' is the default mode. However, it can be set to SPAN Mode by clicking the SPAN Mode checkbox in **Capture > Interface Configuration**.



Also, you can set port speed and behaviour for both network port A and B.

► **Note:** Any change in this panel immediately affects the network link.



Port Status

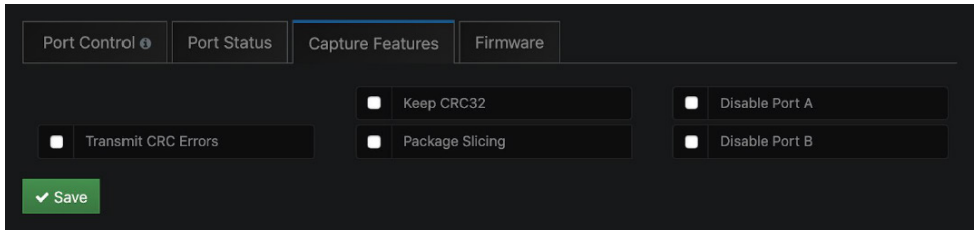
This tab provides you with an overview of the Link Partner Status and Fault Status for both port A and B.

The screenshot shows the 'Port Status' configuration page. At the top, there are tabs for 'Port Control', 'Port Status', 'Capture Features', and 'Firmware'. The 'Port Status' tab is active. Below the tabs, there are two main sections: 'Link Partner Status' and 'Fault Status'. Each section has a table with columns for 'A' and 'B'.

Link Partner Status	A	B
Link Partner Auto-Neg Capable	No	No
Next Page Request	N/A	N/A
Link Partner Next Page Capable	N/A	N/A
Link Partner Acknowledge Capable	N/A	N/A
Link Partner Advertise 1000BASE_T_FDX	N/A	N/A
Link Partner Advertise 1000BASE_T_HDX	N/A	N/A
Link Partner Advertise 100BASE_T_FDX	N/A	N/A
Link Partner Advertise 100BASE_T_HDX	N/A	N/A
Link Partner Advertise 10BASE_T_FDX	N/A	N/A
Link Partner Advertise 10BASE_T_HDX	N/A	N/A
Link Partner Advertise Asymmetric Pause	N/A	N/A
Link Partner Advertise Symmetric Pause	N/A	N/A

Fault Status	A	B
Parallel Decetion Fault	No	No
Remote Fault	No	No
Master/Slave Fault	N/A	N/A
Local Receiver Fault	No	No
Remote Receiver Fault	No	No
Idle Entry Count	0	0
100BASE_T_X Lock Error	No	No
100BASE_T_X Receive Error	No	No
100BASE_T_X Transmit Error	No	No
100BASE_T_X SSD Error	No	No
100BASE_T_X ESD Error	No	No
1000BASE_T Lock Error	No	No
1000BASE_T Receive Error	No	No
1000BASE_T_X Transmit Error	No	No
1000BASE_T_X SSD Error	No	No
1000BASE_T_X ESD Error	No	No
1000BASE_T_X Carrier Extension Error	No	No

Capture Features



This tab allows the setting of the following capture features:

- ⦿ Enable timestamps in live capture
- ⦿ Keep CRC32
- ⦿ Disable Port A
- ⦿ Transmit CRC Errors
- ⦿ Package Slicing
- ⦿ Disable Port B

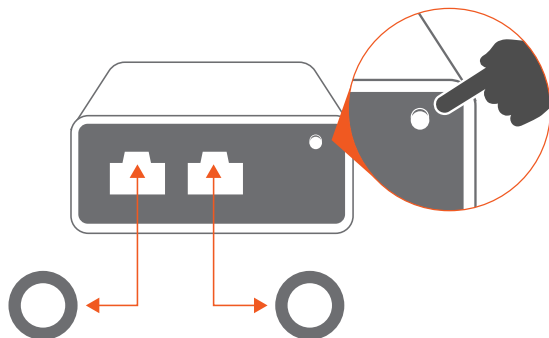
Features can be enabled by clicking the checkbox for each specific feature you want to use.

Firmware

If you want to change the firmware of your IOTA, you can select a firmware version in the drop-down menu and apply it by clicking the 'Flash Firmware' button.

3.3 AUTONOMOUS CAPTURE

To be able to capture traffic in networks where remote access over the network is not allowed or not possible, you can start IOTA's autonomous capture feature by pressing the physical START/STOP button.



START: Starts capture. IOTA will use latest settings in Capture Control

STOP: Stop Capture

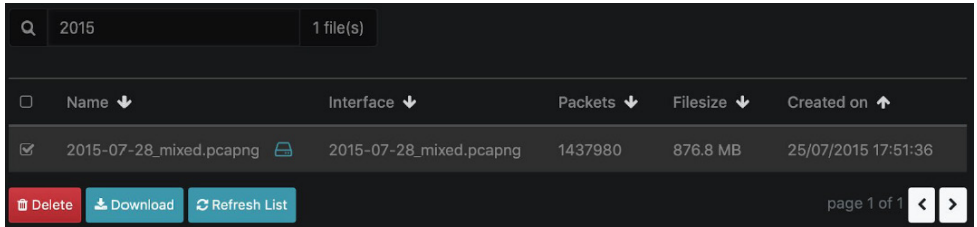
RESET: Disconnect power from IOTA. Long-press the START/STOP button and while holding, reconnect power and hold for 20 seconds. RESET is complete when LEDs are green.


- ▶ **Note:** Make sure have applied the settings in Interface configuration before you deploy the IOTA in the network you want to analyze.



3.4 DATA VAULT

Captured Files

Navigate to **Data Vault > Captured Files** to download the raw PCAP-NG file or multiple selected files from a list. The entire file or group of files is downloaded in a .zip archive.

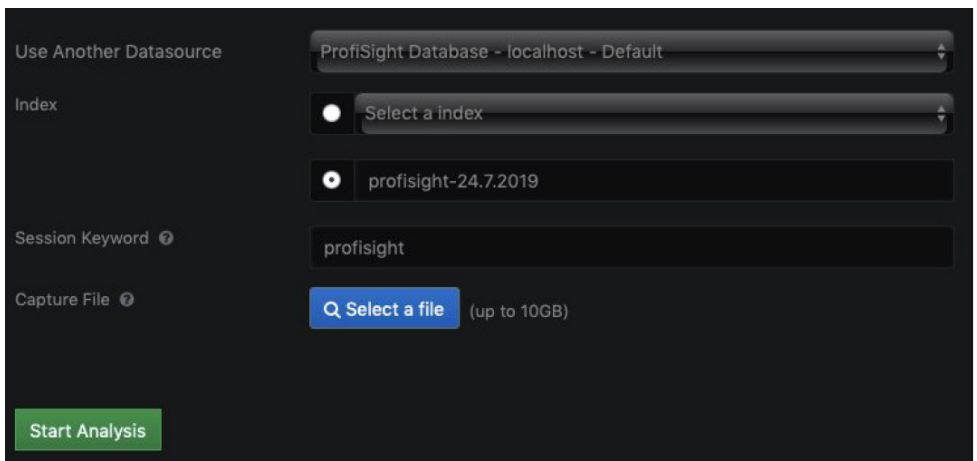


<input type="checkbox"/>	Name ↓	Interface ↓	Packets ↓	Filesize ↓	Created on ↑
<input checked="" type="checkbox"/>	2015-07-28_mixed.pcapng 	2015-07-28_mixed.pcapng	1437980	876.8 MB	25/07/2015 17:51:36

page 1 of 1  

Import a PCAP-NG


If you have a PCAP-NG or PCAP file that is not directly captured to the internal disk of the IOTA, click the 'select a file' button to upload the new capture file to the IOTA. Once uploaded, make sure to set the time range of the dashboards to that of the file you uploaded, to ensure the graphs display the correct data.




Use Another Datasource: ProfiSight Database - localhost - Default

Index: Select a index

profisight-24.7.2019

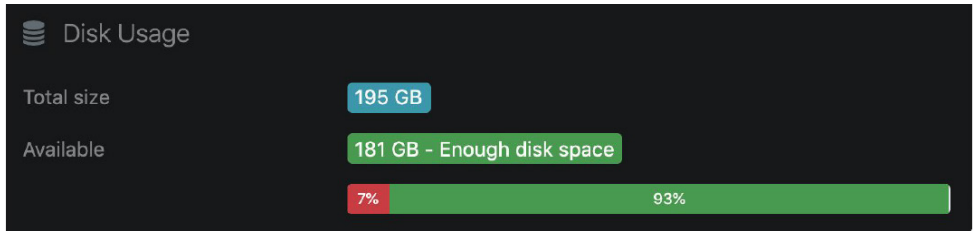
Session Keyword : profisight

Capture File : (up to 10GB)

3.5 DATA MANAGEMENT

Disk Usage

Navigate to **Data Management > Capture Machine** to get an overview of the disk usage, including total disk size and available disk space.



A good practice is to check every once in a while the amount of free storage left and make an assessment on whether a cleanup is in order or not, as there are limitations for capturing and indexing related to the available space:

- New captures can only start if at least 5% of disk space is available.
- Database indexing can only start if at least 10% of disk space is available. If already running, indexing will stop if less than 10% of disk space remains available.

Schedule a Cleanup

Data retention management is available at **Data Management > Capture Machine > Schedule a Cleanup**. Capture files and index older than specified time range will be deleted regularly.

The screenshot shows the 'Schedule a Cleanup' form with the following configuration:

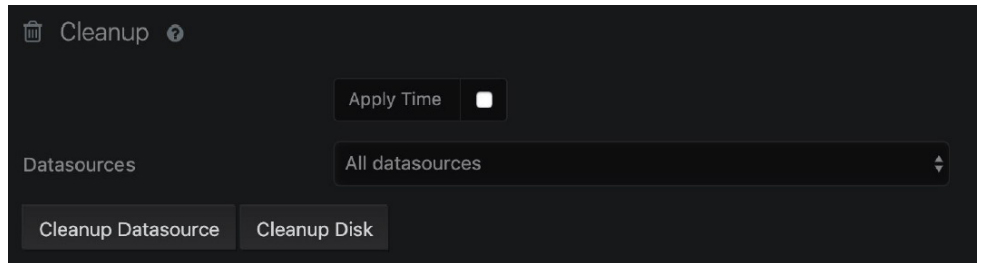
- Frequency: 2
- Unit: Week (s)
- Action: Save Cleanup Event

A confirmation message at the bottom states: "Files older than 2 week(s) will be deleted" with a trash icon.

Manual disk Cleanup

Manual cleanup of capture files and index is possible with the following options:

- Selective cleanup based on time
- Selective cleanup based on index
- Cleanup index or PCAP files or both



ANALYSIS GUIDE

4.1 DASHBOARD OVERVIEW



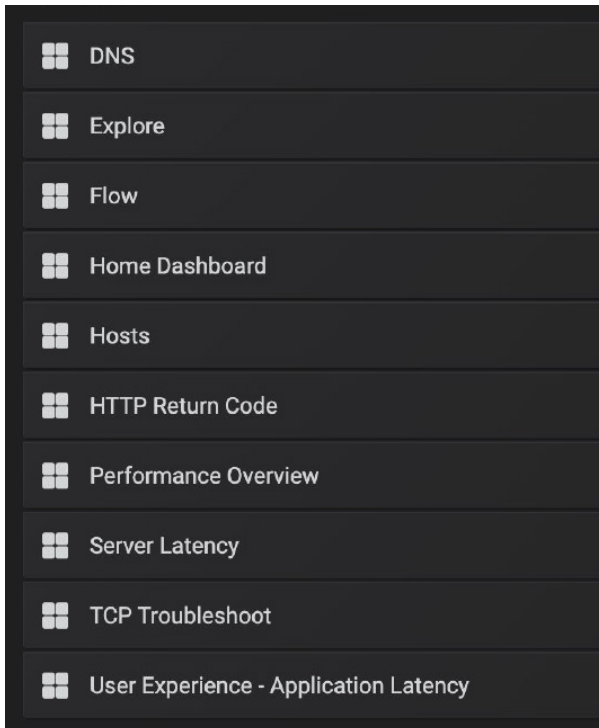
1. Main menu
2. Logout
3. Main dashboard selection
4. Time range selection
5. Dashboard area
6. Display filter
7. PCAP file download
8. Dashboard navigation with filters and time selection
9. Dashboard configuration

4.2 BASIC NAVIGATION

Main dashboard selection menu

This menu displays all the available dashboards, the list of dashboards is non-exhaustive and will change over time to include new features and other improvements.

- ▶ **Note:** Accessing a dashboard from this menu resets the Time pickers time range and the Display filter defined in the current dashboard. To navigate through dashboard keeping time range and filters use the '**Goto >>**' dashboard navigation.



Time range selection


Time range and automatic refresh rate can be set from this menu.


The screenshot shows a dark-themed interface for selecting time ranges. At the top, there is a toolbar with icons for chart, star, share, save, settings, and a monitor. A dropdown menu is open, showing 'Last 24 hours' selected. Below the toolbar, the menu is divided into two sections: 'Quick ranges' and 'Custom range'.

Quick ranges

Last 2 days	Yesterday	Today	Last 5 minutes
Last 7 days	Day before yesterday	Today so far	Last 15 minutes
Last 30 days	This day last week	This week	Last 30 minutes
Last 90 days	Previous week	This week so far	Last 1 hour
Last 6 months	Previous month	This month	Last 3 hours
Last 1 year	Previous year	This month so far	Last 6 hours
Last 2 years		This year	Last 12 hours
Last 5 years		This year so far	<u>Last 24 hours</u>

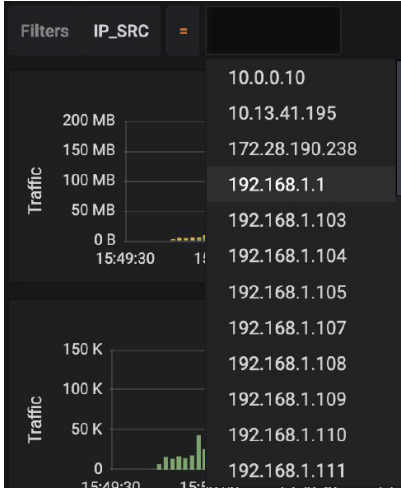
Custom range

From: 

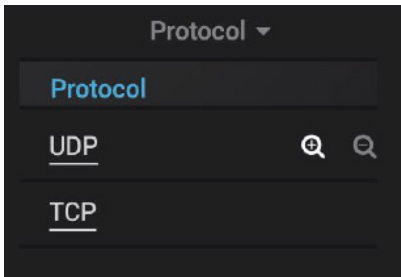
To: 

Filtering traffic

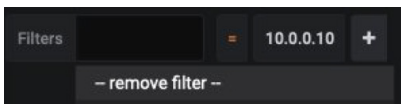
Display filters can be manually defined by clicking the + icon next to the Filter box (top left) and selecting the filter type and value it needs to filter on.



Alternatively, in the dashboards, filters can be applied quickly by using the + magnifier (include filter), or the - magnifier (exclude filter)

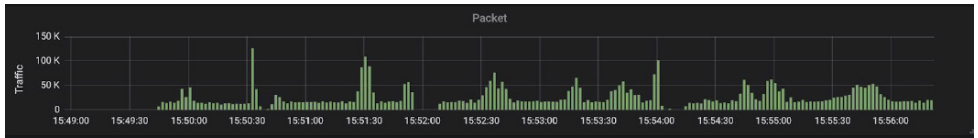


Filters can be removed by clicking the filter type again and selecting '--remove filter--'

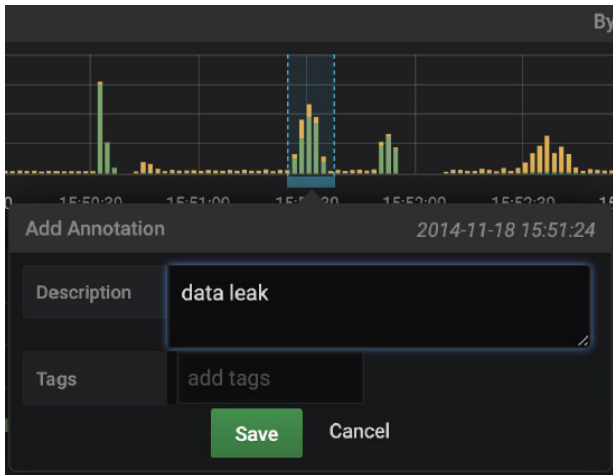


Graphs

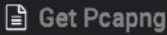
Use the mouse to click-and-drag to zoom in on a specific time range.



Use Ctrl/CMD + mouse drag to add annotations to the graph.



4.3 PCAP FILE DOWNLOAD

A dark grey button with a white document icon and the text "Get Pcapng".

Use the Get Pcapng button in the top right corner of each dashboard to download the file.

The time range of the downloaded PCAP file corresponds with the time range selected in the Time picker menu.

Optionally, filters can be defined. Available filters applied to PCAP-NG files are:

- IP address
- MAC address
- VLAN ID
- Protocol
- Port



If a MAC,IP or a port is selected, the filter applies on both source and destination.

Alternative methods to download PCAP files are:

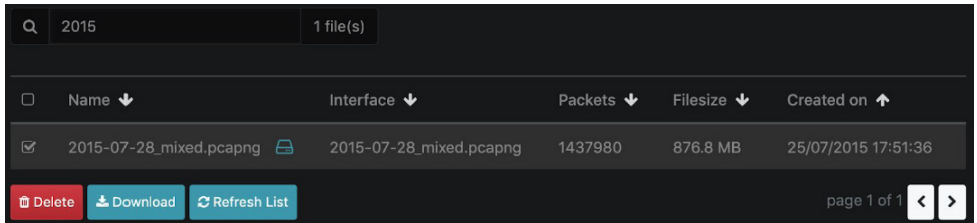
1 - Use the direct download link.

Clicking on any link starts the PCAP file transfer, filtered with value only. Filters are ignored with this method.

Top Client ▾				
Client IP		Data ▾	Average bps	Max bps
192.168.1.1	Download PCAP	223.36 MB	89.62 kbps	510.06 kbps
172.28.190.238		15.37 MB	361.52 kbps	2.31 Mbps
192.168.1.241		97.55 kB	44.54 kbps	54.72 kbps
192.168.1.242		82.67 kB	46.54 kbps	54.72 kbps

2 - Download the raw PCAP-NG file or multiple files from a list (Data Vault > Captured Files)

The entire file or group of file is downloaded in a .zip archive.

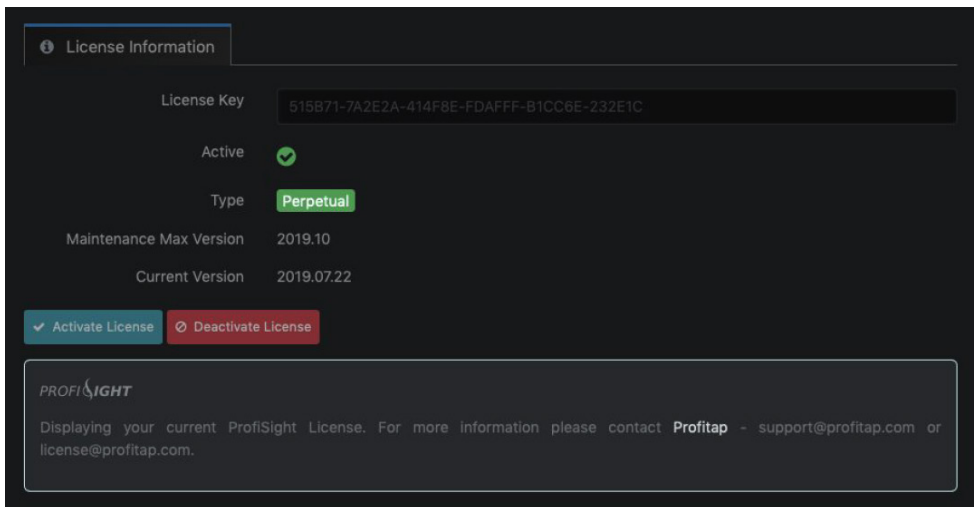


The screenshot shows a file management interface with a search bar containing '2015' and a result count of '1 file(s)'. Below is a table with columns for Name, Interface, Packets, Filesize, and Created on. A single file is listed: '2015-07-28_mixed.pcapng' with interface '2015-07-28_mixed.pcapng', 1437980 packets, and a filesize of 876.8 MB, created on 25/07/2015 17:51:36. At the bottom, there are buttons for 'Delete', 'Download', and 'Refresh List', along with pagination controls showing 'page 1 of 1'.

Name	Interface	Packets	Filesize	Created on
2015-07-28_mixed.pcapng	2015-07-28_mixed.pcapng	1437980	876.8 MB	25/07/2015 17:51:36

LICENSE INFORMATION

Under **Data Management > My License** you can activate or deactivate your IOTA license and current status and version.



The screenshot shows the 'License Information' page. It displays the License Key as '515B71-7A2E2A-414F8E-FDAFFF-B1CC6E-232E1C'. The license is marked as 'Active' with a green checkmark and has a 'Type' of 'Perpetual'. The 'Maintenance Max Version' is '2019.10' and the 'Current Version' is '2019.07.22'. At the bottom, there are two buttons: 'Activate License' (with a checkmark icon) and 'Deactivate License' (with a checkmark in a circle icon). Below the buttons is a text box containing the 'PROFISIGHT' logo and the text: 'Displaying your current ProfiSight License. For more information please contact Profitap - support@profitap.com or license@profitap.com.'

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