





Aplicatii ale IoT Cloud

Profesori îndrumători

CONF. DR. ING. M.BRANZILA
PROF. DR. ING. C. ZET

Aplicatii ale IoT Cloud

Prezentare generală a strategiei de control



Prezentarea Proiectului

Nume Aplicatii ale IoT Cloud

Hardware Raspberry Pi 3B+, ESP32LOLIN, MSP430FR2355, ZYBO-Z7010, USB-COM, DHT

Software Ubuntu Server LTS, unRAID ,Thingsboard, Docker, Arduino IDE, CCS

Disponibilitate Accesare in LAN cu ajutorul browser-ului sau aplicatie pe telefon

Scopul Lucrarii Monitorizarea parametrilor diversi. Proceduri de apelare la distanta (RPC)

Tehnologii Utilizate Wi-Fi, MQTT, UART Modificat, ADC, DAC, RPC

Puteti sa vizitati proiectul pe:
www.100.101.230.104.com

Despre ce discutăm?

01

Ce își propune lucrarea

De ce IoT? De ce server? Ce este RPC?

02

Interfața de nivel înalt

Prezentarea panoului de control și monitorizare

03

Implementarea funcționalității

Cum contribuie toate acestea pentru crearea unui proiect final?

04

Aspecte Viitoare

Cum poate evoluă acest proiect?

01



Ce isi propune lucrarea

De ce IoT? De ce Cloud? Ce este RPC?

Ce își propune lucrarea



De ce IoT?

Fiindcă multiple dispozitive pot coexista și pot fi folosite ca unul singur.



De ce Cloud?

Motivul se află în evoluția noastră. Ce este mai usor de controlat decât ceva ce nu se vede?



Ce este RPC?

RPC (Remote Call Procedure), tradus ca proceduri de apelare la distanță, oferă un plus de control.

Internet of Things

01

Colectarea Informatiilor

Colectează date de la toate dispozitivele conectate.

02

Procesare si Analiza

Procesează informațiile primite în timp real.

03

Control la distanță

Pentru a putea și controla, nu doar monitoriza.

Internet of Things

Aici se află serverul principal și serviciile de Thingsboard

Funcționează precum un intermediar. Este pregătit să primească și să trimită date.

Dispozitive sau senzori ce furnizează date ori pot fi controlate.

Raspberry Pi

01

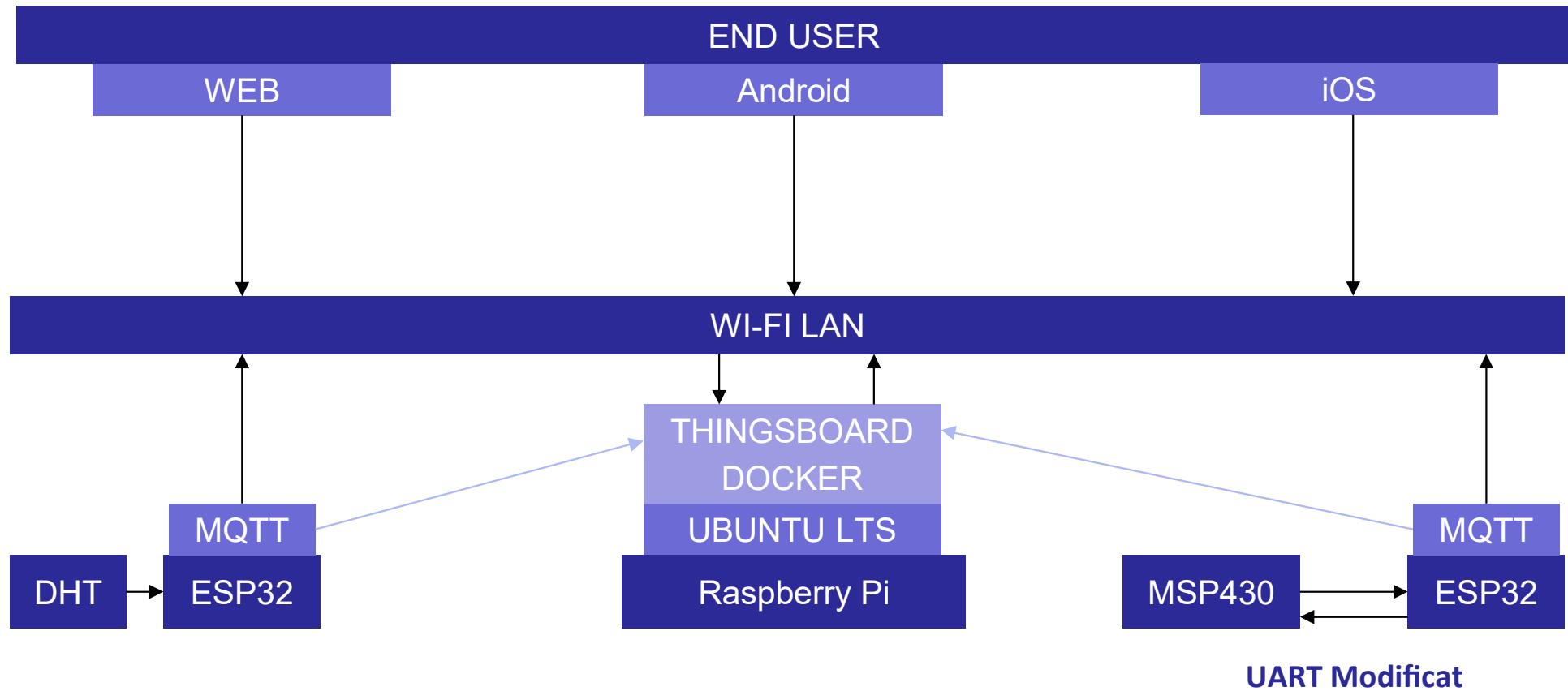
ESP32

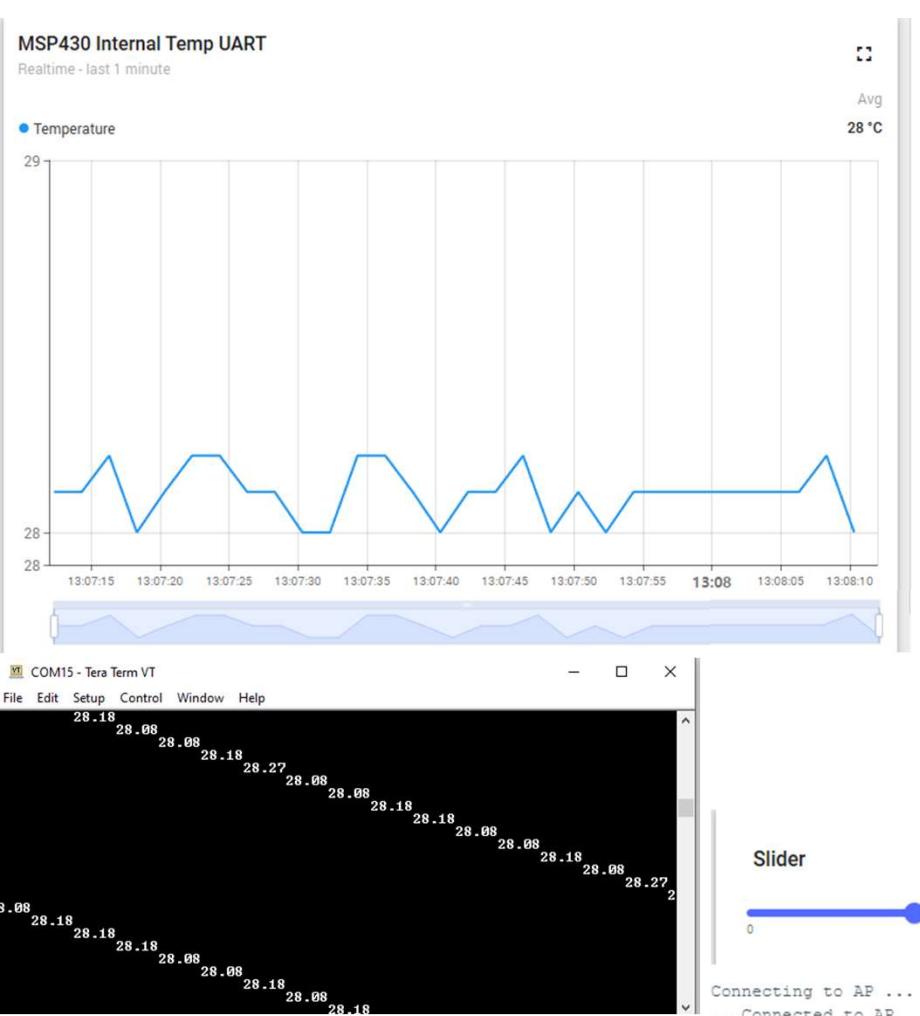
02

Device-uri

03

Arhitectura Sistemului





File Edit Setup Control Window Help

5.00254, 00253, 00251, 00249, 00246, 00243, 00239, 00235, 00231, 00226, 00220, 00215, 00209, 00202, 00196, 00189, 00182, 00174, 00167, 00159, 00151, 00143, 00136, 00128, 00119, 00112, 00104, 00096, 00088, 00081, 00073, 00066, 00059, 00053, 00046, 00040, 00035, 00029, 00024, 00020, 00016, 00012, 00009, 00006, 00004, 00002, 00001, 00000, 00000, 00000, 00001, 00002, 00004, 00006, 00009, 00012, 00016, 00020, 00024, 00029, 00035, 00040, 00046, 00053, 00059, 00066, 00006, 00009, 00012, 00016, 00020, 00024, 00029, 00035, 00040, 00046, 00053, 00059, 00066, 000128, 00136, 00143, 00151, 00159, 00167, 00174, 00182, 00189, 00196, 00202, 00209, 00215, 00200, 00226, 00231, 00235, 00239, 00243, 00246, 00249, 00251, 00253, 00254, 00255, 00255, 0025, 00254, 00253, 00251, 00249, 00246, 00243, 00239, 00235, 00231, 00226, 00220, 00215, 00209, 00202, 00196, 00189, 00182, 00174, 00167, 00159, 00151, 00143, 00136, 00128, 00119, 00112, 00104, 00096, 00088, 00081, 00073, 00066, 00059, 00053, 00046, 00040, 00035, 00029, 00024, 00002, 00016, 00012, 00009, 00006, 00004, 00002, 00001, 00000, 00000, 00000, 00001, 00002, 00004, 00006, 00009, 00012, 00016, 00020, 00024, 00029, 00035, 00040, 00046, 00053, 00059, 00066, 000128, 00136, 00143, 00151, 00159, 00167, 00174, 00182, 00189, 00196, 00202, 00209, 00215, 00200, 00226, 00231, 00235, 00239, 00243, 00246, 00249, 00251, 00253, 00254, 00255, 00255, 0025, 00254, 00253, 00251, 00249, 00246, 00243, 00239, 00235, 00231, 00226, 00220, 00215, 00209, 00202, 00196, 00189, 00182, 00174, 00167, 00159, 00151, 00143, 00136, 00128, 00119, 00112, 00104, 00096, 00088, 00081, 00073, 00066, 00059, 00053, 00046, 00040, 00035, 00029, 00024, 00002, 00016, 00012, 00009, 00006, 00004, 00002, 00001, 00000, 00000, 00000, 00001, 00002, 00004, 00006, 00009, 00012, 00016, 00020, 00024, 00029, 00035, 00040, 00046, 00053, 00059, 00066, 000128, 00136, 00143, 00151, 00159, 00167, 00174, 00182, 00189, 00196, 00202, 00209, 00215, 00200, 00226, 00231, 00235, 00239, 00243, 00246, 00249, 00251, 00253, 00254, 00255, 00255, 0025, 00254, 00253, 00251, 00249, 00246, 00243, 00239, 00235, 00231, 00226, 00220, 00215, 00209, 00202, 00196, 00189, 00182, 00174, 00167, 00159, 00151, 00143, 00136, 00128, 00119, 00112, 00104, 00096, 00088, 00081, 00073, 00066, 00059, 00053, 00046, 00040, 00035, 00029, 00024, 00002,

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Interfata de nivel inalt

Prezentarea panoului de control si
monitorizare

Dashboard Interactiv

Pot fi adăugate oricât de multe dispozitive. Parametrii monitorizați pot fi definiți.

The screenshot shows a user interface for creating dashboards. At the top, there's a search bar and tabs for "Import widget", "Widgets bundles", "All widgets", and a close button. Below is a grid of 16 cards, each representing a different type of dashboard element:

- Charts:** Includes a line chart and a donut chart showing a value of 183.
- Cards:** Shows a temperature reading of 22°C and a QR code.
- Alarm widgets:** Displays a total of 3 alarms with severity levels (Major, Critical, Warning) and status (Cleared, Active).
- Tables:** A table showing device information with columns for Type, Severity, Name, Type, and Random.
- Count widgets:** Shows a total of 3 and a device count of 296.
- Maps:** A map with several location markers and a zoom control.
- Analogue gauges:** Two analog gauges with scales from 0 to 100.
- Buttons:** Buttons labeled "Button" and "Send".
- Control widgets:** Includes a knob control and a switch control.
- Status indicators:** Battery levels at 100% and signal strength icons.
- SCADA symbols:** A 3D cube icon labeled "Resources" and "SCADA symbols".
- Traditional SCADA fluid system:** A schematic diagram of a piping system.
- General high-performance SCADA...**: A small card showing a heat pump control.
- High-performance SCADA oil & gas**: A schematic diagram of industrial equipment.
- High-performance SCADA energy system**: A schematic diagram of industrial equipment.
- High-performance SCADA fluid system**: A schematic diagram of industrial equipment.

At the bottom, there are navigation links for "Dashboard", "Basic settings", "OAuth 2.0", and a help icon.

Accesare Facila

Monitorizarea poate fi efectuată atât de pe dispozitive cu Windows, Linux, MacOS cât și de pe dispozitive portabile ce rulează Android sau iOS.



Add bundle

1 Basic settings 2 OAuth 2.0 3 Layout

Title*

Android Application Create new

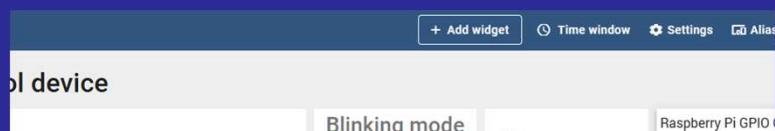
iOS Application Create new

Description

Connect mobile app

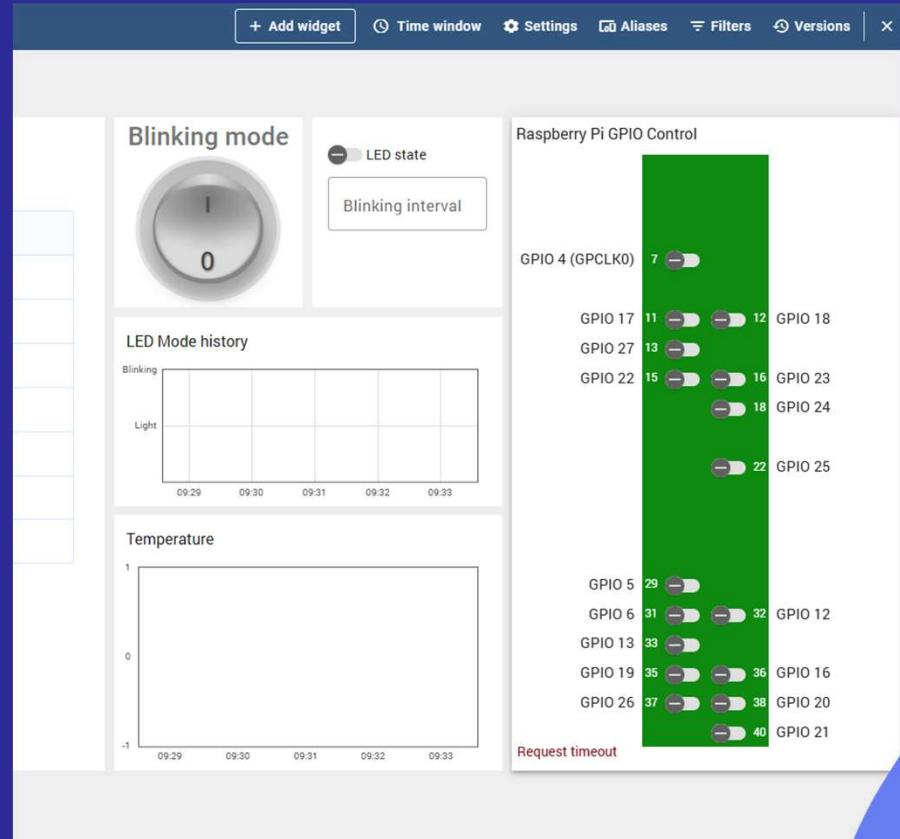
QR code Download on the App Store GET IT ON Google Play

This screenshot shows the "Add bundle" configuration interface. It includes tabs for "Basic settings", "OAuth 2.0", and "Layout". The "Basic settings" tab is active, featuring fields for "Title*", "Android Application" (with a "Create new" button), "iOS Application" (with a "Create new" button), and a "Description" text area. Below these is a "Connect mobile app" section containing a QR code, links to download the app from the App Store and Google Play, and a small brain icon.



Proceduri de apelare la distanță

Acste proceduri (RPC) permit controlul de la distanță a dispozitivelor. De la apasarea digitală a unui buton până la reglarea cu precizie a unei valori.



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Aspecte Viitoare

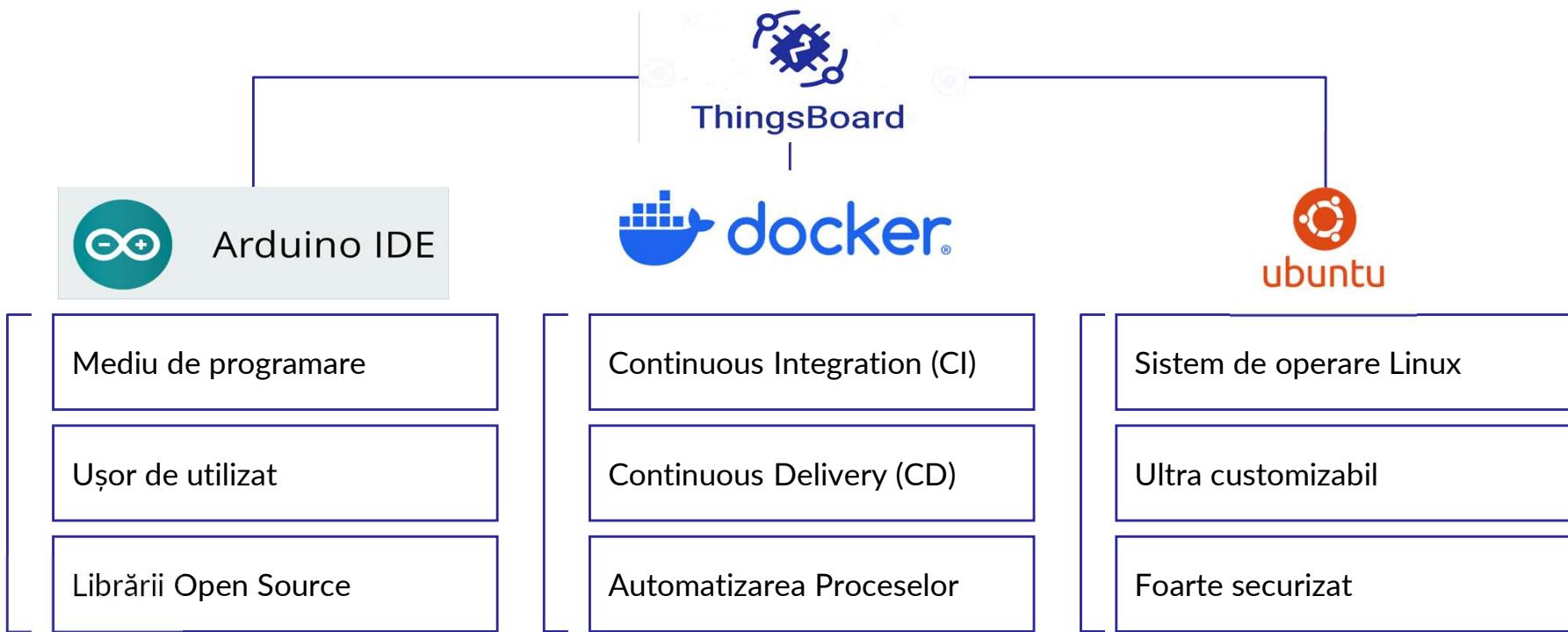
Cum poate evoluă acest proiect?

03

Implementarea functionalitatii

**Cum contribuie toate acestea pentru crearea
unui proiect final?**

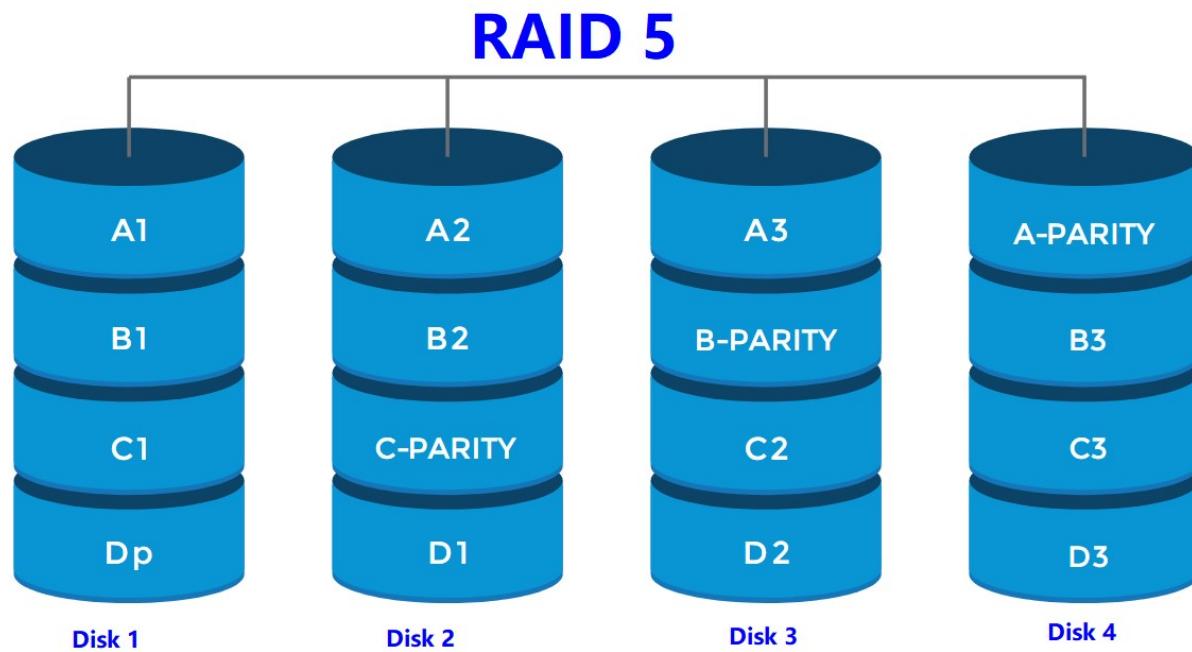
Servicii Utilizate



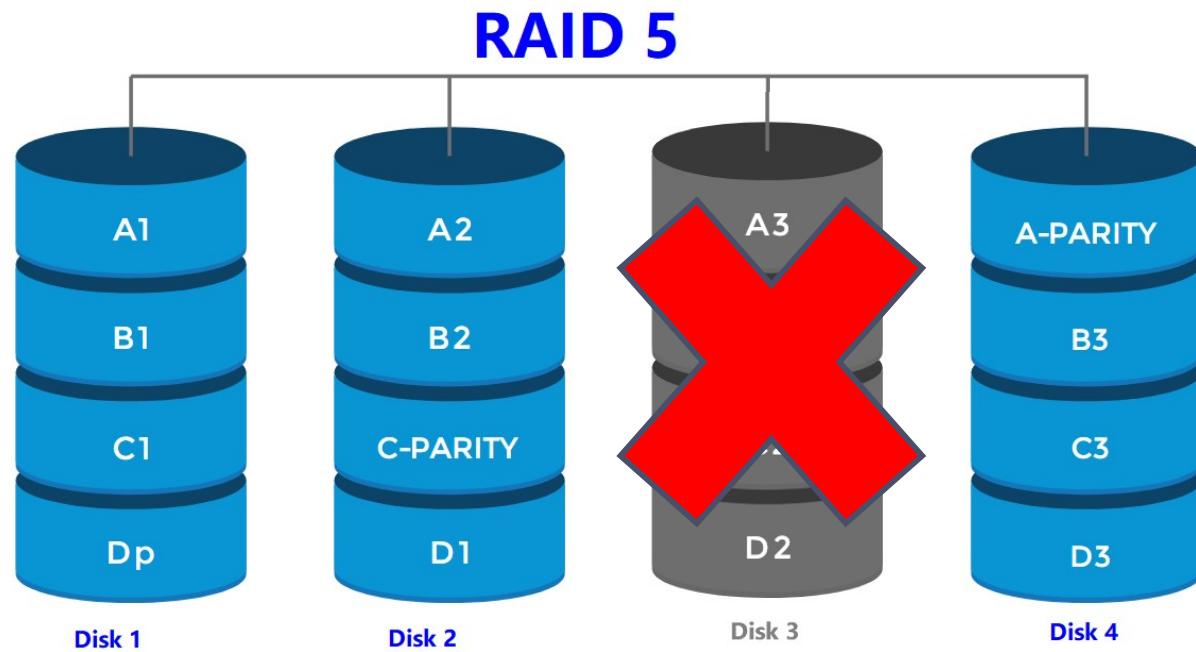
Servicii Utilizate



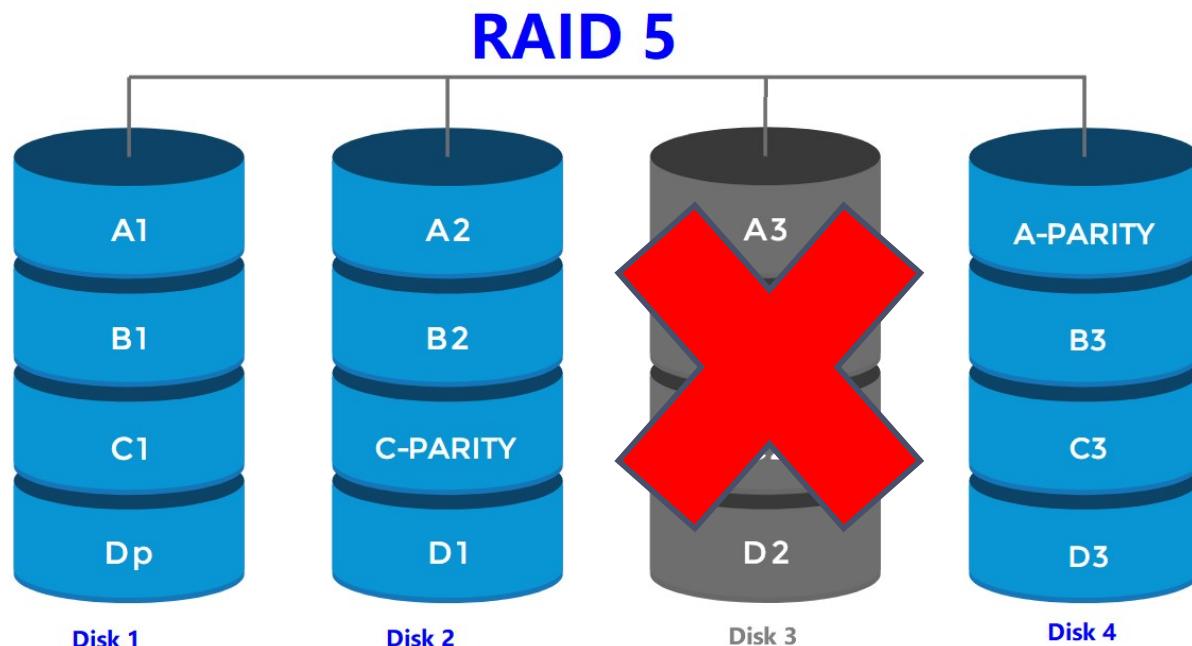
Disaster Recovery



Disaster Recovery

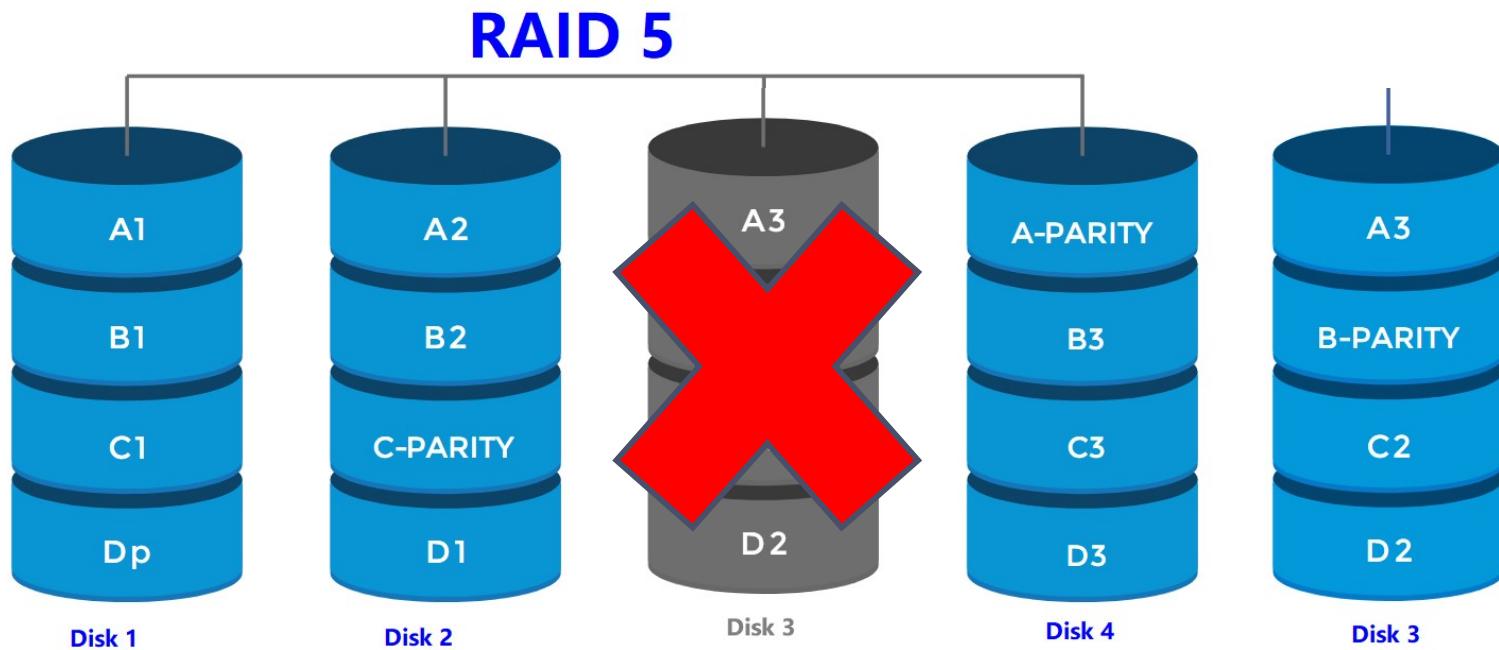


Disaster Recovery



$$A1 + A2 + ? = A\text{-Parity} \Rightarrow ? = A\text{-Parity} - A1 - A2$$

Disaster Recovery



$$A1 + A2 + ? = A\text{-PARITY} \Rightarrow ? = A\text{-PARITY} - A1 - A2$$

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Aspecte Viitoare

Cum poate evolua acest proiect într-o direcție Enterprise?



Ce este VMWare ESXi?

VMware ESXi este un hypervizor tip bare-metal

Rulează mai multe mașini virtuale simultan.

Optimizează resursele hardware pentru a partaja componentele.

Not Secure | rpi-1.primp-industries.com/ui/#/host

vmware ESXi™ on Arm Fling

rpi-1.primp-industries.com

Host

- Manage
- Monitor
- Virtual Machines 5
- Storage 2
- Networking 1

rpi-1.primp-industries.com

Version: ESXi on Arm Fling (Build 39898804)
State: Normal (connected to vCenter Server at 192.168.30.200)
Uptime: 0.22 days

CPU FREE: 2 GHz USED: 4 GHz CAPACITY: 6 GHz
MEMORY FREE: 4.37 GB USED: 3.54 GB CAPACITY: 7.9 GB
STORAGE FREE: 39 GB USED: 65.75 GB CAPACITY: 104.75 GB

Hardware

Manufacturer	Raspberry Pi Foundation		
Model	Raspberry Pi 4 Model B		
CPU	4 CPUs x ARM Limited Cortex-A72 r0p3		
Memory	7.9 GB		
SGX	0 B / 0 B		
Virtual flash	0 B used, 0 B capacity		
Networking			
Hostname	rpi-1.primp-industries.com		
IP addresses	1. vmk0: 192.168.30.67 2. vmk0: fe80::7288:6bff:fe85:c053		
DNS servers	1. 192.168.30.1		
Default gateway	192.168.30.1		
IPv6 enabled	Yes		
Host adapters	2		
Networks	Name VM Network VMs 5		
Storage			
Physical adapters	1		
Datastores	Name Type Capacity Free		
nfs	NFS	97.93 GB	82.51 GB
rpi-datastore1	VMFS6	104.75 GB	39 GB

Configuration

Image profile	(Updated) ESXi-7.0.0-39898804-standard (VMware, Inc.)
vSphere HA state	Not configured
vMotion	Supported

System Information

Date/time on host	Saturday, September 19, 2020, 22:13:50 UTC
Install date	Tuesday, September 01, 2020, 14:10:59 UTC
Asset tag	
Serial number	0000DCA632B28067
BIOS version	UEFI Firmware v1.20
BIOS release date	Monday, August 31, 2020, 17:00:00 -0700

Performance summary last hour

Consumed host CPU (%)

Consumed host memory (GB)

Time: 14:13 to 15:13

Ce este VMWare vSphere?



VMware vSphere este
o platformă de
virtualizare completă.



Include ESXi și vCenter
pentru management
centralizat.



Permite administrarea
resurselor și mașinilor
virtuale eficient.

Dynamic Domain Name System

01

**Permite Accesare
Worldwide**

02

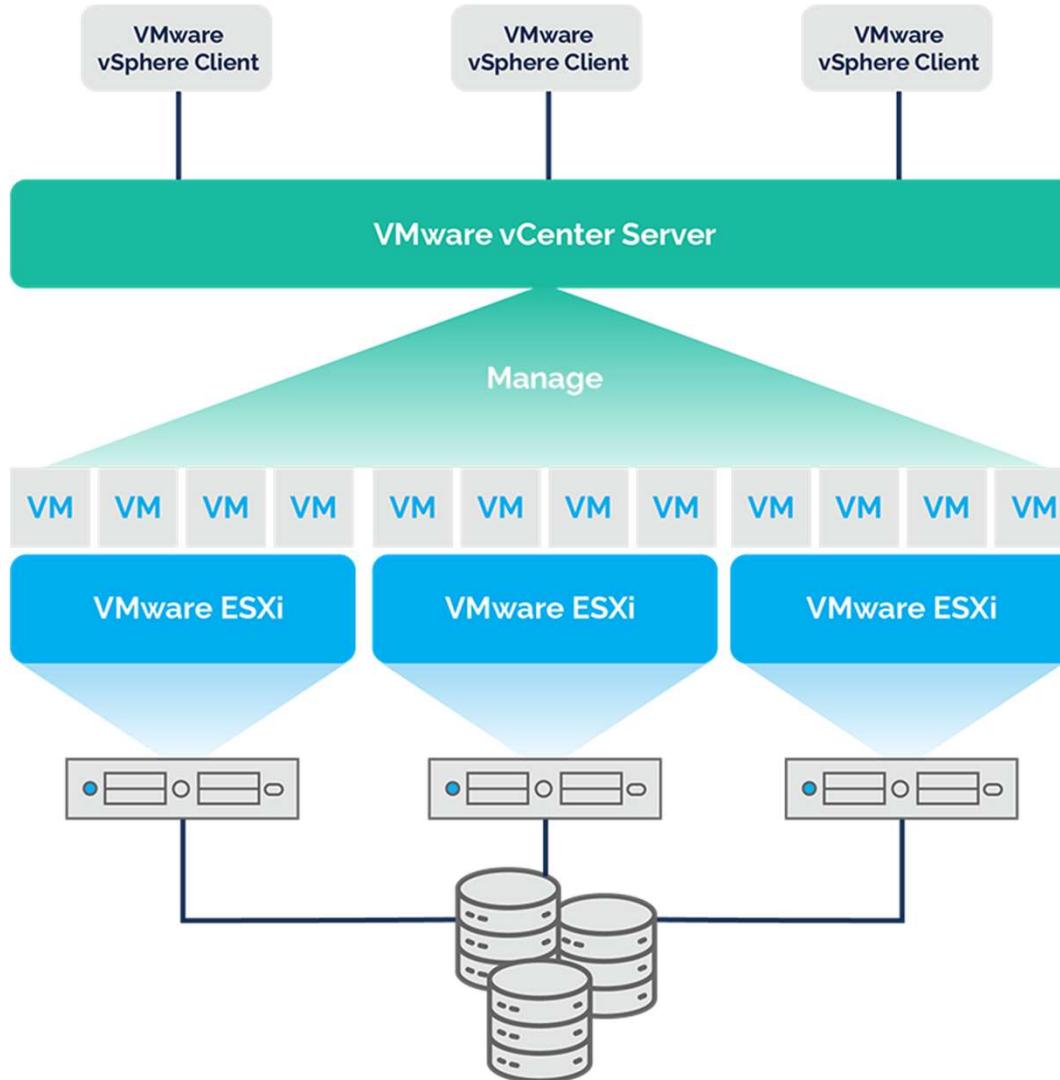
**Serviciu ajutator
pentru VPN**

03

**Actualizare
automata IP**

04

**Faciliteaza
accesul remote**



Care este scopul?

Pentru a evita un punct unic de eșec, suprasolicitarea unui port de internet, downtime-ul cauzat de erori sau chiar pierderea unui server, VMware oferă o soluție completă de management hardware. Aceasta permite partajarea eficientă a resurselor și sarcinilor, precum și realizarea de copii de rezervă în timp real. Astfel, în cazul unei defecțiuni sau blocări, un alt server poate prelua automat funcțiile celui afectat, aproape instantaneu.

De ce VMWare?

01

**Tot ceea ce a fost
prezentat poate fi
implementat astfel**

02

**Reprezinta
siguranta sporita
prin vSAN si NSX**

03

**Faciliteaza
accesibilitatea
numeroasa a
utilizatorilor**

04

**Usureaza
implementarea
Inteligentei
Artificiale**

Inteligenta Artificială

OLLAMA

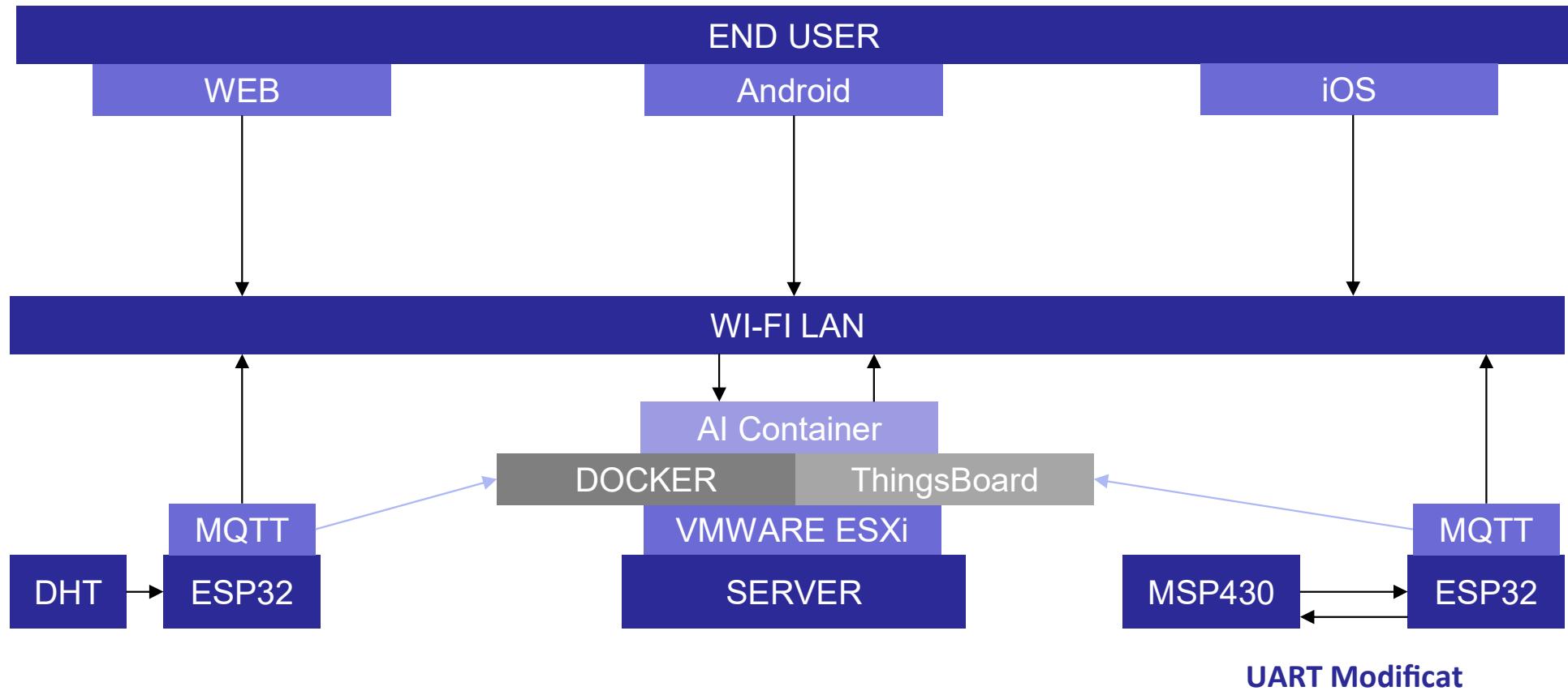


Poate fi implementată
ca și un container
pentru Docker

Există multiple modele
deja antrenate și gata
de folosit

Antrenarea ulterioară
poate fi efectuată cu
ușurință

Arhitectura Sistemului



Model	Parameters	Size	Download
Gemma 3	1B	815MB	ollama run gemma3:1b
Gemma 3	4B	3.3GB	ollama run gemma3
Gemma 3	12B	8.1GB	ollama run gemma3:12b
Gemma 3	27B	17GB	ollama run gemma3:27b
QwQ	32B	20GB	ollama run qwq
DeepSeek-R1	7B	4.7GB	ollama run deepseek-r1
DeepSeek-R1	671B	404GB	ollama run deepseek-r1:671b
Llama 4	109B	67GB	ollama run llama4:scout
Llama 4	400B	245GB	ollama run llama4:maverick
Llama 3.3	70B	43GB	ollama run llama3.3
Llama 3.2	3B	2.0GB	ollama run llama3.2
Llama 3.2	1B	1.3GB	ollama run llama3.2:1b
Llama 3.2 Vision	11B	7.9GB	ollama run llama3.2-vision
Llama 3.2 Vision	90B	55GB	ollama run llama3.2-vision:90b
Llama 3.1	8B	4.7GB	ollama run llama3.1
Llama 3.1	405B	231GB	ollama run llama3.1:405b
Phi 4	14B	9.1GB	ollama run phi4
Phi 4 Mini	3.8B	2.5GB	ollama run phi4-mini
Mistral	7B	4.1GB	ollama run mistral
Moondream 2	1.4B	829MB	ollama run moondream
Neural Chat	7B	4.1GB	ollama run neural-chat
Starling	7B	4.1GB	ollama run starling-lm

Large Language Models

AI-ul este open source.

Accesul la internet poate fi limitat pentru securitate.

Necesară multe resurse hardware

<https://ollama.com>



**Get up and running with large
language models.**

Run [DeepSeek-R1](#), [Qwen 3](#), [Llama 3.3](#), [Qwen 2.5-VL](#),
[Gemma 3](#), and other models, locally.

Download ↓

Available for macOS, Linux,
and Windows

Ollama Docker pentru AI

 New Chat



 Ollama Web UI



 Modelfiles

 Prompts

 Documents

 Search

Select a model

Set as default



How can I help you today?

Tell me a fun fact
about the Roman Empire

Show me a code snippet
of a website's sticky header

Help me study
vocabulary for a college entrance exam

Give me ideas
for what to do with my kids' art

 Send a message



LLMs can make mistakes. Verify important information.



Shekhar Khandelwal



NextCloud Storage Solution



Poate fi implementată
ca și un container
pentru Docker



Control total asupra
datelor tale.



Colaborare online prin
aplicații integrate (chat,
calendar, documente).





Good evening

Set status

13.5 °C Fair night at 11:00 PM

Recommended files

- sports-car-146873_960_7... .png
- new line dancing club (2).jpg
- Country-Dancing-Arthur.... .jpg
- Nextcloud Hub LinkedIn b... .png
- Country-Dancing-Arthur.... .jpg
- new line dancing club.jpg
- Billy_Bobs_Texas_Countr... .jpg

Talk mentions

✓
No unread mentions

Q Talk updates ✓
- You can now change your cam...

market analysis.xlsx
 sports-car-146873_960_720.png

Discuss project Butterscotch
Nextcloud Hub LinkedIn backgrou...

Weekly hangout 😊
You left the call

Nina Cercy
Are you available tomorrow?

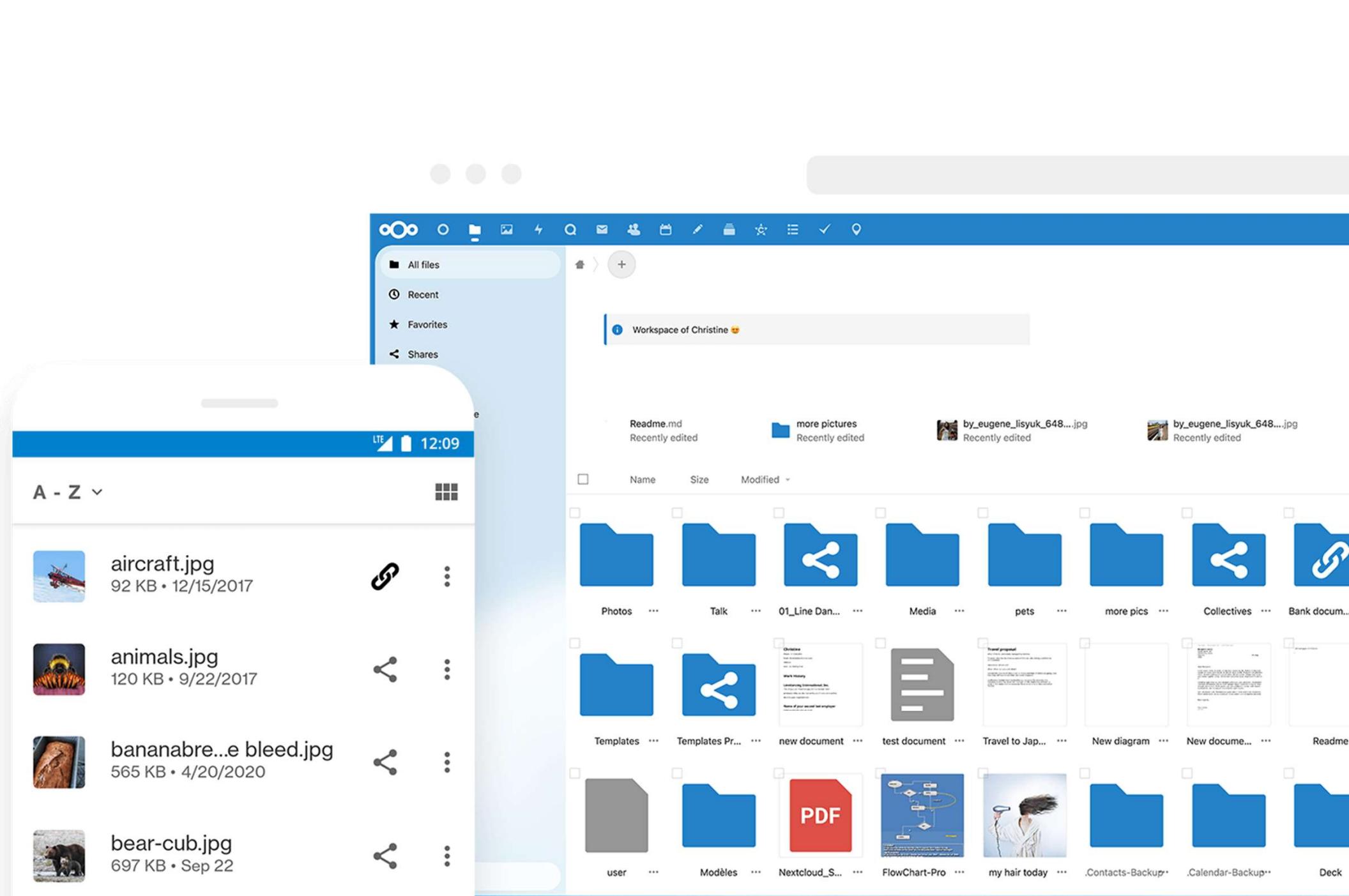
Upcoming events

- Release party 🎉
Today at 11:00 PM
- fix reported issues
Tomorrow at 12:00 AM
- Release integration apps for Nextclou...
Monday at 2:00 PM
- Company call
Tuesday at 11:00 AM
- Draft blogpost about integration
Wednesday at 12:00 AM
- Company call
in 11 days

Upcoming cards

- Release party 🎉 in 4 hours
- fix reported issues in 5 hours
- Release integration apps for ... in 3 days
- Draft blogpost about integra... in 4 days

Customize



JIRA



Gestionare eficientă a
proiectelor și a
taskurilor cu versionare



Urmărire detaliată a
erorilor și incidentelor



Colaborare agilă între
echipe (Scrum, Kanban).



Teams in Space
Software project

Backlog

Board

Reports

Releases

Components

Issues

Repository

Add item

Settings

Board



Quick Filters

TO DO 5

Engage Jupiter Express for outer solar system travel

SPACE TRAVEL PARTNERS

⬆️ 5 TIS-25

Create 90 day plans for all departments in the Mars Office

Local Mars Office

🚫 9 TIS-12

Engage Saturn's Rings Resort as a preferred provider

Space Travel Partners

⬆️ 3 TIS-17

Enable Speedy SpaceCraft as the preferred

SpaceCraft

IN PROGRESS 5

Requesting available flights is now taking > 5 seconds

SeeSpaceEZ Plus

⬆️ 3 TIS-8

Engage Saturn Shuttle Lines for group tours

Space Travel Partners

⬆️ 4 TIS-15

Establish a catering vendor to provide meal service

Local Mars Office

⬆️ 4 TIS-15

Engage Saturn Shuttle Lines for group tours

Space Travel Partners

⬆️ 1 TIS-15

CODE REVIEW 2

Register with the Mars Ministry of Revenue

Local Mars Office

⬆️ 3 TIS-11

Draft network plan for Mars Office

Local Mars Office

⬆️ 3 TIS-15

DONE 8

Homepage footer uses an inline style - should use a class

Large Team Support

⬆️ TIS-68

Engage JetShuttle SpaceWays for travel

Space Travel Partners

⬆️ 5 TIS-23

Engage Saturn Shuttle Lines for group tours

Space Travel Partners

⬆️ TIS-15

Establish a catering vendor to provide meal service

Local Mars Office

Version 3.0 UNRELEASED

[Release](#)

[] Start date not set Release: 14/Sep/15 [Release Notes](#)

Version 3

63 days left

0 Warnings

16 Issues in version

3 Issues done

2 Issues in progress

11 Issues to do

1–16 of 16

[View in Issue Navigator](#)

P	T	Key	Summary	Assignee	Status	Development
↑	💡	TIS-40	Update FlightController to handle multiple travel providers in one reservation	 Max Taylor	OPEN	1 branch
↑	🕒	TIS-41	Update LodgingController to handle multiple travel providers in one reservat...	 Max Taylor	CODE REVIEW	
↑	💡	TIS-42	Extend booking experience in UI to include multiple hotels on one reservation	 Kevin Campbell	OPEN	1 branch
↑	💡	TIS-43	Extend booking experience in UI to include multiple flights on one reservation	 Kevin Campbell	OPEN	1 branch
↑	💡	TIS-44	Reward Customers an extra 5-10% when they book a large trip	 William Smith	OPEN	1 branch
↑	💡	TIS-45	Email non registered users to sign up with Teams In Space	 Jennifer Evans	CLOSED	MERGED

KiCad



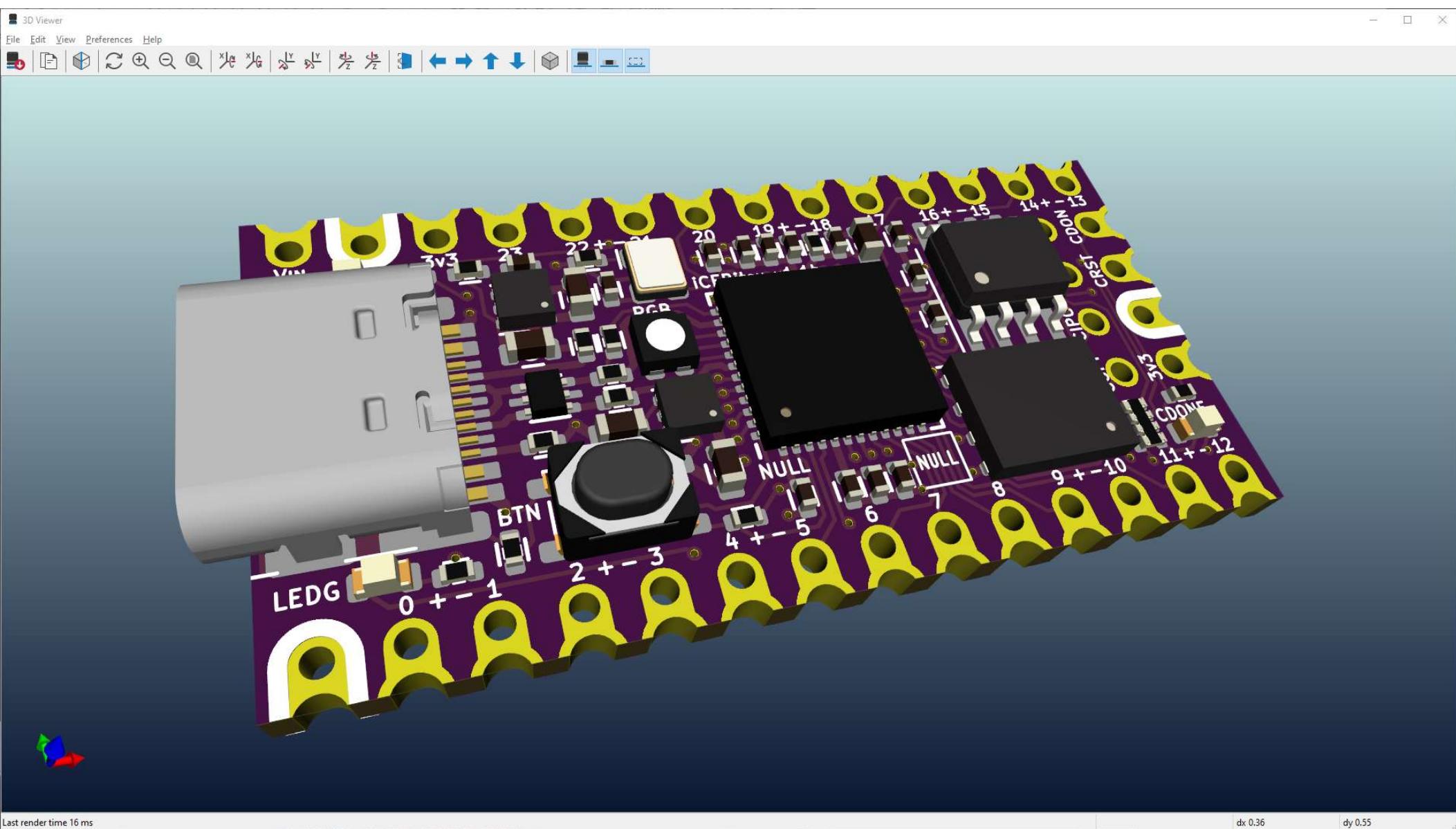
Software open-source
pentru proiectare PCB.



Permite realizarea
schemelor electronice
și layout-urilor.



Utilizat în prototipare și
producție hardware.



Dezvoltare pe verticală

■
Orice serviciu sau
aplicatie poate fi
virtualizata.

■
Compatibilitate 100%
indiferent de
hardware.

■
Deschis spre viitoare
aplicatii.

UNRAID

Version: 6.12.4 

Uptime 29 days 14 hours 22 minutes • Unraid OS Pro

Media server • Tower



DASHBOARD MAIN SHARES USERS SETTINGS PLUGINS DOCKER VMS APPS TOOLS

Home

Search



Installed Apps
Previous Apps
Pinned Apps
Favourite Repo

AI
Backup
Cloud
Crypto Currency
Downloaders
Drivers
Game Servers
Home Automation
Language
Media Applications
Media Servers
Network Services
Other
Plugins
Productivity
Security
Tools / Utilities
All Apps
Repositories
Settings
Statistics
Credits
Support

Array Started

Recently Added

Check out these newly added applications from our awesome community [SHOW MORE](#)



bbergle-zap2xml

BBerlie's Repository
Other

[Info](#) [Support](#) [Install](#)



semaphore

Masterwishesx's Repository
Cloud

[Info](#) [Support](#) [Install](#)



binhex-official-byparr

Binhex's Repository
Network

[Info](#) [Support](#) [Install](#)



BookLore

jmtaylor's Repository
MediaServer

[Info](#) [Support](#) [Install](#)

Spotlight Apps

Each month we highlight some of the amazing work from our community [SHOW MORE](#)



Jellyfin

BBerlie's Repository
Other

[Info](#) [Support](#) [Install](#)



MONTHLY SPOTLIGHT

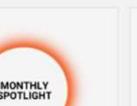
May 2025



Tasmota Power Monitor

SimonFair
Other

[Info](#) [Support Forum](#) [Install](#)



MONTHLY SPOTLIGHT

Apr 2025



User Scripts

Andrew Zawadzki
Tools

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MONTHLY SPOTLIGHT

Mar 2025



ZFS Master

IkerSaint
Tools

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MONTHLY SPOTLIGHT

Feb 2025

The ZFS Master plugin provides information and control over the ZFS Pools in your Unraid. Available ZFS Pools are listed under the "Main/ZFSMaster" tab.

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docker desktop

Search for images, containers, volumes, exten... Ctrl+K

Containers Images Volumes Builds Dev Environments Docker Scout Extensions

Containers Give feedback

Container CPU usage Data unavailable at this time Container memory usage Data unavailable at this time Show charts

Search Only show running containers

<input type="checkbox"/>	Name	Image	Status	CPU (%)	Port(s)	Last started	Actions
<input type="checkbox"/>	dapr_placement 50ff1c486675	daprio/dapr	Running	N/A	6050:50005	16 minutes ago	
<input type="checkbox"/>	dapr_redis 0b6dfb39e33f	redis	Running	N/A	6379:6379	16 minutes ago	
<input type="checkbox"/>	dapr_zipkin 4f252851cfb2	openzipkin/	Running	N/A	9411:9411	16 minutes ago	
<input type="checkbox"/>	k8s POD_clusterconnect-agent-77f697f7 99f4a5d589b3	registry.k8s.	Running	N/A		14 minutes ago	
<input type="checkbox"/>	k8s POD_cluster-metadata-operator-67f5 95a49b9d8cc4	registry.k8s.	Running	N/A		13 minutes ago	
<input type="checkbox"/>	k8s POD_microsoft-defender-collectors-h 67f21862a23d	registry.k8s.	Running	N/A		13 minutes ago	
<input type="checkbox"/>	k8s POD_logcollector-8f96d69f7-hrfnk_a ce3e75b17e02	registry.k8s.	Running	N/A		13 minutes ago	
<input type="checkbox"/>	k8s POD_controller-manager-5fc757c98 a86163de6a16	registry.k8s.	Running	N/A		13 minutes ago	
<input type="checkbox"/>	k8s POD_extension-manager-5cc876fb8- 684ad7fabc39	registry.k8s.	Running	N/A		13 minutes ago	
<input type="checkbox"/>	k8s POD_gatekeeper-controller-manager- 6aa642ceb47e	registry.k8s.	Running	N/A		13 minutes ago	

Showing 54 items

Engine running Kubernetes running RAM 3.85 GB CPU 62.06% BETA Terminal 1

Multumim!

Aveți întrebări?

cristian.ghervasa@student.tuiasi.ro



Soluții avem, probleme să găsim.

Aplicatii ale IoT Cloud