



IP Maestro

OcNOS

IP Maestro: Point-and-Click Element Management System (EMS) for OcNOS

June 2024



Whether you operate a sprawling telecom network, a dynamic data center, or a complex enterprise environment, managing the complexities of modern IP networks demands a powerful and adaptable solution.

Developed in collaboration with industry experts, IP Maestro – the Point-and-Click Element Management System (EMS) for OcNOS – is designed to address these complexities head-on. By simplifying operations, enhancing visibility, and driving efficiency across diverse network environments, IP Maestro empowers network teams to proactively manage network health and performance.

In this solution brief, we will explore the management challenges of modern IP networks and delve into how IP Maestro can empower your organization to overcome these obstacles and achieve operational excellence.

Challenges: Managing Modern IP Networks

Today's IP networks are characterized by increasing complexity, demanding operational requirements, and the need for constant adaptation. Network teams often face:

- **Network Complexity:** Managing a multitude of devices, configurations, and technologies across diverse network environments creates a significant burden.
- **Manual Processes:** Reliance on time-consuming, manual tasks for provisioning, monitoring, and troubleshooting leads to inefficiencies and the potential for human error.
- **Visibility Gaps:** Lack of real-time, centralized insights into network health and performance hinders proactive management and rapid issue identification.
- **Troubleshooting Inefficiency:** Pinpointing and resolving network problems quickly is difficult without intuitive tools and clear visualizations, impacting overall network uptime.
- **Security Management:** Ensuring consistent security policies and configurations across a distributed network can be a complex and error-prone undertaking.

How IP Maestro Solves These Challenges

IP Maestro was developed with a deep understanding of the real-world challenges faced by service providers and data center operators. Our team worked hand-in-hand with industry experts to craft an EMS that addresses complexity head-on, delivering:

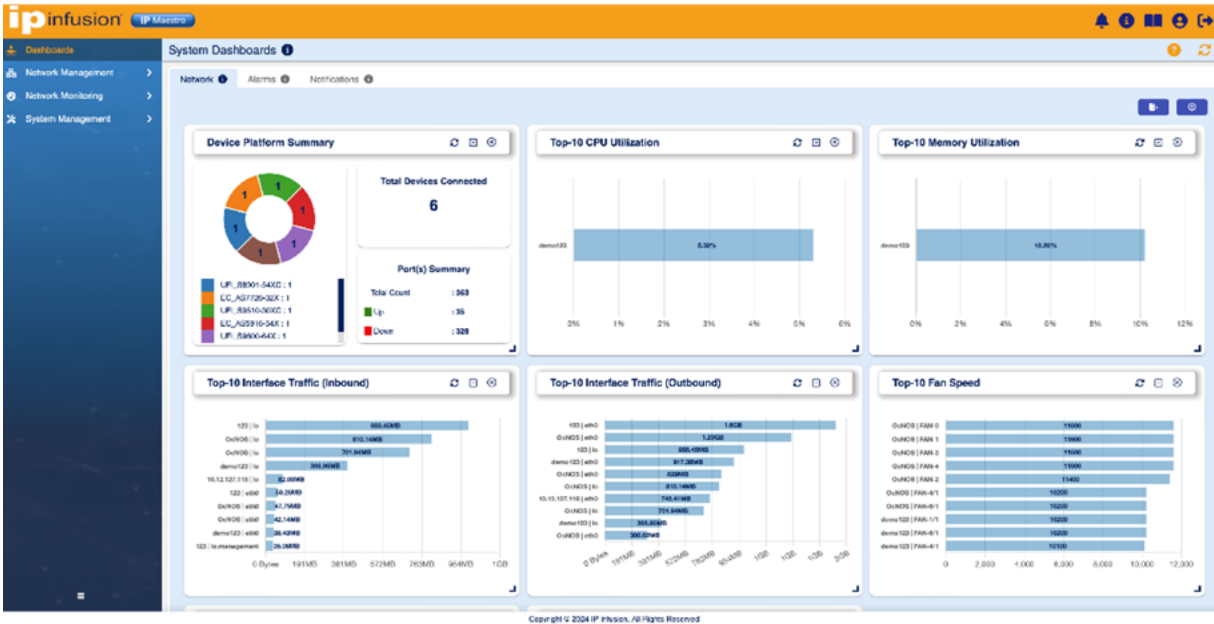


Image 1. IP Maestro Dashboard

- **Centralized Management:** IP Maestro is your mission control center. Manage all your OcNOS devices on a single, unified platform, eliminating tool fatigue and streamlining operations.
- **Automation:** We know your time is precious. IP Maestro automates routine tasks like device discovery, provisioning, and configuration so you can focus on innovation, not tedious manual processes.
- **Enhanced Visibility:** Gain real-time, actionable insights into network health and performance with customizable dashboards, intuitive topology visualizations, and detailed device metrics.
- **Streamlined Troubleshooting:** When issues arise, IP Maestro guides you to the root cause with lightning speed. Intuitive tools and visualizations pinpoint problems, minimizing downtime.
- **Simplified Security:** Protecting your network is our priority. Role-based access controls and centralized configuration management help you implement consistent security policies, minimize vulnerabilities, and safeguard your critical data.

Key Features of IP Maestro

IP Maestro offers a comprehensive suite of features to simplify and optimize IP network management:

- **Intuitive Web-Based Interface:** Drag-and-drop dashboards, real-time network visualizations, and tailored views make network management a breeze.

- **Device Management:** Enables configuration of OcnOS devices at scale through NETCONF data models. Provides granular control of device parameters, in-depth status monitoring, and streamlined software image and lifecycle management.
- **Zero Touch Provisioning:** Automates device onboarding using DHCP or user-defined criteria. Policy-driven configuration templating minimizes manual intervention, reducing deployment times and potential errors.
- **Topology Discovery (LLDP):** Dynamically maps network structure and interconnections through the Link Layer Discovery Protocol (LLDP). Provides interactive topology visualizations with real-time link status updates and customizable link health indicators, aiding in rapid troubleshooting.

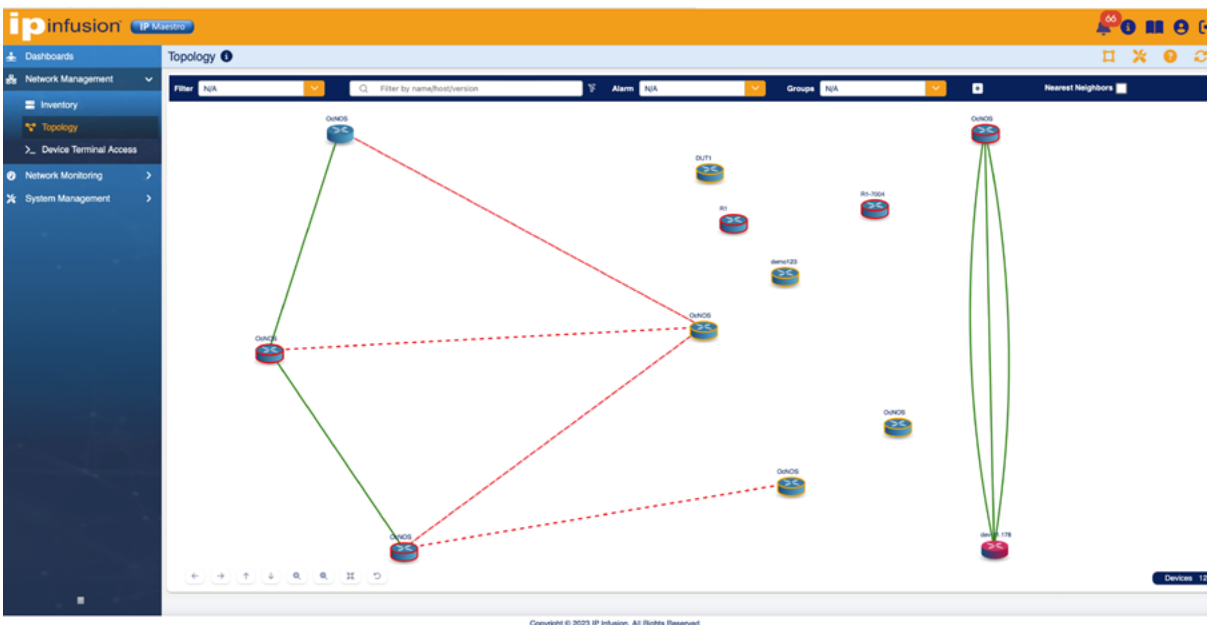


Image 2. IP Maestro Topology Discovery

- **Security Manager:** Enforces role-based access control (RBAC) with LDAP authentication, providing fine-grained permissions for users and groups. Centralized policy management ensures secure access and change control across the network, mitigating unauthorized access risks.

IP Maestro

User Management

Accounts

Email Notifications

Global Search

Username	First Name	Last Name	Email	Role
jbrown	James	Brown	jbrown@keycloak.org	ip-maestro-user

Image 3. IP Maestro Role-Based Access Control (RBAC)

- **Fault Management:** Proactively monitors devices for faults and alarms using NETCONF notifications and customizable thresholds. Offers centralized fault aggregation, customizable alert severity levels, and comprehensive historical tracking for efficient troubleshooting and root-cause analysis.

- **Remote Backup of the IPMA Database:** Safeguards critical network configuration and operational data through automated remote backups, ensuring business continuity and disaster recovery. System settings and configurations are downloadable on the remote system as a compressed file.

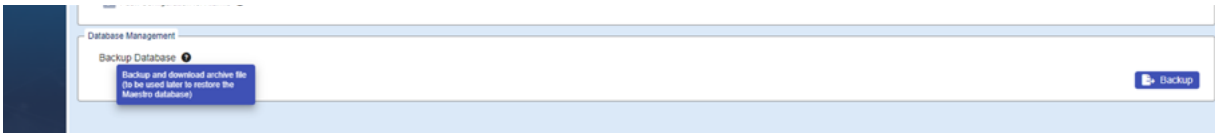


Image 4. IP Maestro Remote Backup

- **OcNOS Data Model-Driven Support:** Leverages OcNOS's YANG-based data models for flexible device and feature management. Ensures comprehensive support for current OcNOS functionality while seamlessly adapting to future network technologies and feature extensions.
- **Beyond OcNOS Management, ZR+ Pluggables Monitoring:** IP Maestro offers visibility on ZR+ pluggables connected to OcNOS switches and routers by exporting metadata using EEPROM. This helps to timely prevent network overloads and downtimes if transceiver failure occurs.

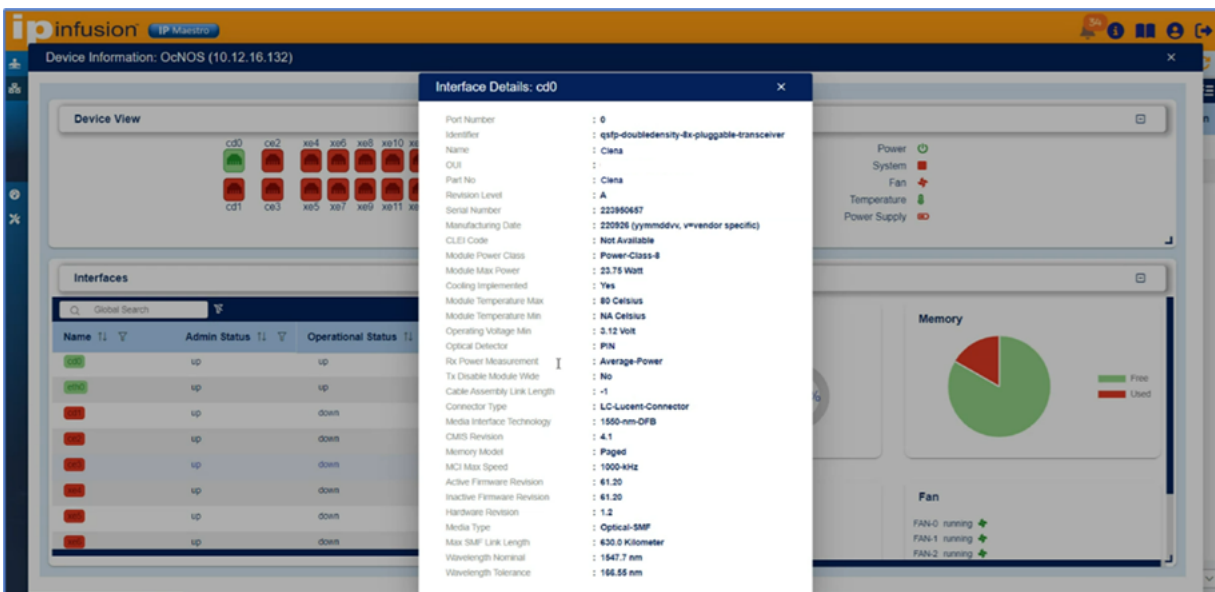


Image 5. IP Maestro Topology Discovery

Target Use Cases

IP Maestro's versatility shines in managing diverse OcNOS-powered networks simultaneously. Whether your OcNOS infrastructure spans carrier networks from internet exchanges (IX) and mobile access to broadband access and aggregation or powers data center fabrics, IP Maestro's unified interface streamlines management across all scenarios. This empowers network teams with comprehensive visibility, automation, and control for optimal performance and efficiency, regardless of the environment.

Deployment and Sizing

IP Maestro prioritizes a swift deployment experience. The combination of a straightforward installation process on the widely used Ubuntu Server Edition, a containerized design for streamlined setup, and the flexibility to deploy on-premises or in the cloud (AWS, Azure, GCP) ensures you'll be up and running with IP Maestro quickly. IP Maestro System recommendations:

- IP Maestro can be deployed using Ubuntu Server Edition (20.04 or above)
- IP Maestro can be deployed using VM Hypervisor (KVM 7.2.0 or above)
- IP Maestro uses Containers and Micro-Services built on docker compose (version 2.20.2)

Use our recommendations as a starting point, and easily tailor your deployment to match your network's size:

NUMBER OF MANAGED OCNOS DEVICES	CPU MEMORY DISK FOOTPRINT
250	8 vCPUs, 32 GB Memory, 1 TB Disk

Table 1. IP Maestro Hardware Requirements

Next Steps

Our goal is to make your IP Maestro experience as efficient as possible. Let us know if you'd like help in creating a deployment plan optimized for your network. **For more information about IP Maestro or IP Infusion open networking solutions, please contact our sales team at ipisales@ipinfusion.com.**

ABOUT IP INFUSION

IP Infusion is a leading provider of open network software and solutions for carriers, service providers and data center operators. Our solutions enable network operators to disaggregate their networks to accelerate innovation, streamline operations, and reduce Total Cost of Ownership (TCO). Network OEMs may also disaggregate network devices to expedite time to market, offer comprehensive services, and achieve carrier grade robustness. IP Infusion network software platforms have a proven track record in carrier-grade open networking with over 500 customers and over 10,000 deployments. IP Infusion is headquartered in Santa Clara, Calif., and is a wholly owned and independently operated subsidiary of ACCESS CO., LTD. Additional information can be found at <http://www.ipinfusion.com>

© 2024 IP Infusion, Inc. All rights reserved. IP Infusion is a registered trademark and the ipinfusion logo and OcNOS are trademarks of IP Infusion, Inc. All other trademarks and logos are the property of their respective owners. IP Infusion assumes no responsibility for any inaccuracies in this document. IP Infusion reserves the right to change, modify, transfer, or otherwise revise this publication without notice.