# The Guide to Modern
# IP Address Management (IPAM)

# The Evolution of IP Address Management

IP address management (IPAM) plays a pivotal role in network administration, providing the means for organizations to efficiently oversee and distribute IP addresses and subnets. At the heart of every connection made to the internet or a local network lies an IP address—a unique identifier assigned to each device. Subnets, on the other hand, are groupings of these IP addresses, organized within the same network or range. IPAM streamlines and centralizes the management of these IP addresses, and their subnets, aiding network administrators in maintaining accurate records and avoiding the potential chaos of IP address conflicts.

Early IPAM tools developed in the late 1990s were often expensive and difficult to use, limiting their adoption. For that reason, management of IP addresses has traditionally been done manually and sometimes is still tracked using spreadsheets. This effort is time consuming, error prone, and simply not scalable. This is especially true for large organizations with hundreds or thousands of devices connected to their network.

## The Modern Approach: Automating IPAM

Today it is understood that any network with over 250 devices or users which assigns IP addresses dynamically - any mid-to-large enterprise network - must use an automated IPAM system. These IPAM tools provide a range of features that automate the management of IP addresses. They make it easier to track IP address assignments, manage DNS records, and detect IP address conflicts.

By <u>automating IP address management</u>, networking teams eliminate "fat finger" and manual configuration errors and gain full visibility into the state of their organization's network infrastructure. They can more easily track and display usage information, monitor IP addresses not in use, and Identify traffic outliers that may indicate security issues.

Many current IPAM tools provide an operational overview of your networks, meaning they show you the current state of your IP addresses - how many there are, where they are located, which are in use etc. This information is helpful of course, but it's a moment in time glance at your network. More modern open source IPAM tools like NetBox demonstrate the ideal state of your network. Then, through automation, you can put in place methods to reach that state, and routinely check to ensure records are in line with that suggested ideal state.

> *More modern open source IPAM tools like NetBox demonstrate the ideal state of your network.*

While the goal of a good IPAM will certainly involve tracking IP addresses and subnets, it's also worth considering where IPAM data is useful outside of simply tracking. When you're able to pair IPAM data with physical assets, your inventory takes on a completely different shape and feel - becoming more valuable outside of simply what IPs are used and where. What internet circuits are using which IP addresses or subnets and how can having that information help support react faster? What VLANs correspond to which subnet and which switches are supposed to have each VLAN? These questions get easier to answer when IPAM ties into other data sources as it does in modern IPAM tools.

## Graduating From IPAM in Spreadsheets

For organizations ready to adopt a modern IPAM tool and leave spreadsheets behind, there are many options to consider. Smaller organizations or networking teams with limited budgets often consider starting with an open source IPAM tool, such as NetBox. Used by hundreds of organizations and tens of thousands of networking professionals, NetBox acts as a network source of truth so networking teams can automate against it. Today it is largely understood that any network with multiple subnets or users which assigns IP addresses dynamically - any mid-to-large enterprise network - must use an IPAM system, with enterprise-grade features for security, reliability, and support.

NetBox Cloud is an enterprise-grade, SaaS version of NetBox that eliminates the administrative overhead associated with hosting and managing NetBox instances and the complex tech stack they require. Companies with complex networks use NetBox Cloud to get all the benefits of NetBox plus enterprise-level service level agreements, commercial support, and features for reliability, security, compliance, and more.

Regardless of which solution is chosen, moving from the use of spreadsheets to track IP addresses, to an automated IPAM system is a critical step in any organization's network automation journey.

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### About NetBox Labs

NetBox Labs helps companies build and manage complex networks. We help customers accelerate network automation by delivering open, composable products and supporting the network automation community.

The company's NetBox Cloud product offers an enterprise-grade, SaaS version of open source NetBox — the world's most popular network source of truth. NetBox Labs is the commercial steward of NetBox and Orb, the next-generation open source network observability platform.

With dozens of customers like Dartmouth College, Constant Contact, and Chewy, and backed by investment from GGV Capital, Grafana Labs CEO Raj Dutt, Flybridge, IBM, Salesforce Ventures, and Mango Capital; NetBox Labs is building the open, composable network automation stack for networking teams.