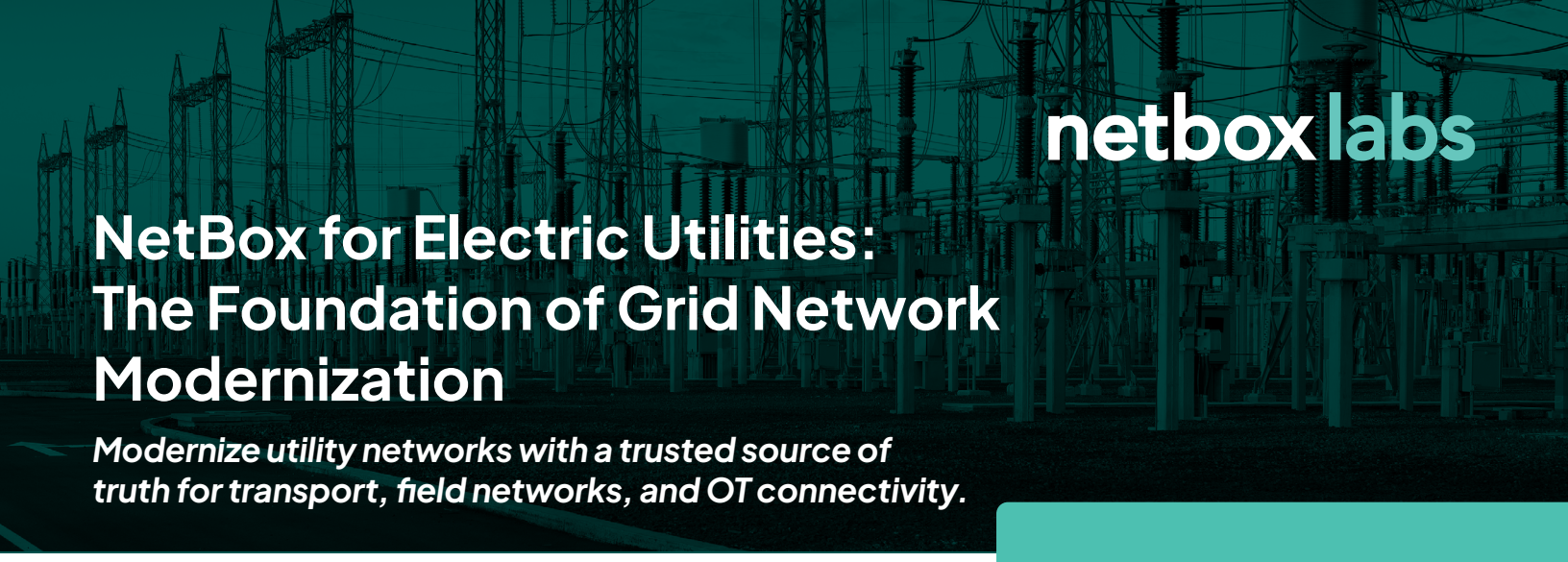

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NetBox for Electric Utilities: The Foundation of Grid Network Modernization

Modernize utility networks with a trusted source of truth for transport, field networks, and OT connectivity.

Utilities are operating networks that are growing more complex and more dynamic every year. Traditional, dispatch-only NOCs were designed for static, centralized infrastructure and struggle to keep up with modern IP-based networks and the need to detect and resolve issues before they impact service. At the same time, the rapid adoption of EVs, distributed solar, and energy storage is dramatically increasing the number of networked, controllable devices on the distribution grid – often by 7-10x – expanding the scale and operational surface area utilities must manage.

This shift is forcing Network Operations Centers (NOCs) to evolve from reactive, dispatch-driven workflows to proactive, data-driven operations. Automation is no longer optional: zero-touch provisioning, reliable change management, and proactive remediation all depend on accurate, continuously updated infrastructure data.

The NetBox platform is the world's most widely adopted system of record for infrastructure data. It provides a unified data model that represents the entire network - devices, racks, IP addresses, interfaces, and connections - in a consistent, API-accessible format. As a comprehensive ontology of infrastructure metadata and the industry standard for infrastructure documentation, NetBox serves not just as a system of record, but as the foundation for operating, automating, securing, and scaling modern utility networks.

Challenges NetBox Solves:

Low trust in inventory and connectivity data (spreadsheets, tribal knowledge, stale records) makes it hard to troubleshoot and automate.

ServiceNow often isn't "network-deep." Utilities may have it, but implementations frequently fail to deliver the granular data engineers need.

Multi-vendor networks (WAN + FAN + OT adjacencies) create fragmented sources of truth - especially when vendor/controller tools only cover parts of the environment.

Drift and inconsistent changes increase compliance risk, slow incident response, and undermine modernization programs.

What is NetBox?

NetBox is the world's most popular platform for documenting, modeling, and automating networks and infrastructure. Powered by a massive open source community, NetBox serves as the source of truth for tens of thousands of engineers—from growing organizations to Fortune 50 companies.

NetBox's comprehensive data model, robust APIs, and massive ecosystem make documenting and automating networks and infrastructure easy by bringing together all your data into a single cohesive system of record:

- Datacenter infrastructure management (DCIM)
- IP address management (IPAM)
- Circuit management
- And much more

How NetBox Empowers Network and Infrastructure Teams

Beyond acting as a central source of truth for network and infrastructure - modeling what you have and how it connects - the NetBox platform integrates that context into your discovery, assurance, automation, and operations workflows. This enables utilities to:

1) Build a trusted network CMDB (designed for engineers)
Traditional CMDBs often fall short in utility environments because they are not built to model network relationships, connectivity, and operational detail at the depth engineers require. NetBox is purpose-built as a network and infrastructure centric CMDB, allowing utilities to accurately represent devices, sites, circuits, IP addressing, interfaces, and physical and logical connectivity in a single, consistent data model.

For utility network and OT teams, this means engineers can trust the data they are using to troubleshoot issues, plan upgrades, and design automation workflows. NetBox captures the context that matters - how devices are connected, where they are deployed, what configurations they are running, and how they fit into the broader grid network. This shared, authoritative source of truth reduces reliance on spreadsheets and tribal knowledge while enabling teams to confidently scale IP-based transport, field-area networks, and substation connectivity as grid modernization accelerates.

2) Maintain infrastructure accuracy
NetBox Assurance continuously monitors the network to ensure that the source of truth remains an accurate reflection of real-world infrastructure. It automates drift detection and intelligent reconciliation, empowering teams to detect, review, and resolve discrepancies quickly and confidently.

NetBox Assurance is fully integrated with NetBox Discovery, providing native support for collecting inventory data from systems like VMware vCenter, Cisco Catalyst Center, Juniper Mist, and many more. This end-to-end loop of discovery, assurance, and automation ensures the network always reflects operational reality.

3) Power NOC modernization + automation at scale
The NetBox platform enables utilities to modernize NOC operations by providing the accurate, contextual infrastructure data required to move beyond dispatch-only workflows. By correlating device inventory, topology, configuration, and lifecycle data in a single source of truth, NOC teams can more quickly isolate likely root causes, understand blast radius, and prioritize remediation before outages escalate. This context is especially critical in multi-vendor utility environments where controller and monitoring tools provide only partial visibility.

As utilities adopt automation and zero-touch provisioning, NetBox becomes the foundation that makes those initiatives reliable at scale. Accurate inventory and intended-state data from NetBox feeds orchestration and automation platforms, enabling consistent provisioning, change validation, and rollback across transport, substation, and field networks. The result is faster deployment, fewer configuration errors, and greater confidence as utilities expand IP-based infrastructure and device density across the grid.

NetBox Labs Drives Real Business Outcomes for Large Electric Utility

At a large, investor-owned electric utility in the western United States, NetBox was adopted as part of a broader network operations center modernization initiative. The utility needed a reliable, network-specific source of truth to support proactive operations, automation, and large-scale infrastructure upgrades across transport and field networks. By centralizing accurate inventory, topology, and configuration data in NetBox, the organization was able to move beyond dispatch-only workflows and lay the foundation for zero-touch provisioning and data-driven troubleshooting - capabilities that had not been achievable with their existing CMDB approach.

They saw the following benefits:
- Faster NOC modernization outcomes with accurate, accessible network context
- Reduced outage risk by identifying drift and inconsistent changes earlier
- Automation at scale (ZTP + orchestrated changes) with a dependable source of truth
- Improved collaboration across network, OT, and operations teams with shared, consistent infrastructure data.

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