AI Ops	Machine Learning / AI	Orchestral ai
Orchestration & Automation	Orchestrator	StackStorm gluware DNA Center
	Automation	ANSIBLE Terraform zpe cloud
Automation Infrastructure		

Nodegrid Data Lake

Visibility, Observability & Analytics
kentik.
Environmental Monitoring Sensors · Probing Agents

Edgenative Automation
ANSIBLE

Version Control
git
Golden Configuration

Source of Truth
netbox

Out of Band Management
Serial Console & Ethernet & Web

Resilient & Secure OOB Network Connectivity
Double-ring™ network, OOB-SDWAN™, 5G, MPLS
zpe

Tools
Image storage, TFTP server, Jumpbox, Compute, Docker Apps
zpe

Test

zpe® SNEAK PEEK

Network Automation Blueprint

A best practice reference architecture for achieving secure & reliable digital services

ZPESYSTEMS.COM **+1.844.4ZPESYS**

IT Security & Reliability are Difficult to Achieve

The majority of systems are no longer housed in a central data center. User demand has led to decentralization of infrastructure, and enterprises must now manage a hybrid mix of on-prem and cloud-delivered solutions. This widespread infrastructure makes it difficult to achieve security and reliability of digital services.

Pandemic lockdowns and the recently forecasted economic recession have exposed gaps in IT's operational readiness. Simply put, most companies don't have enough people to keep operations running. Recent Forrester research states that 66% of companies don't have the tools to support remote/hybrid work for the next two years.
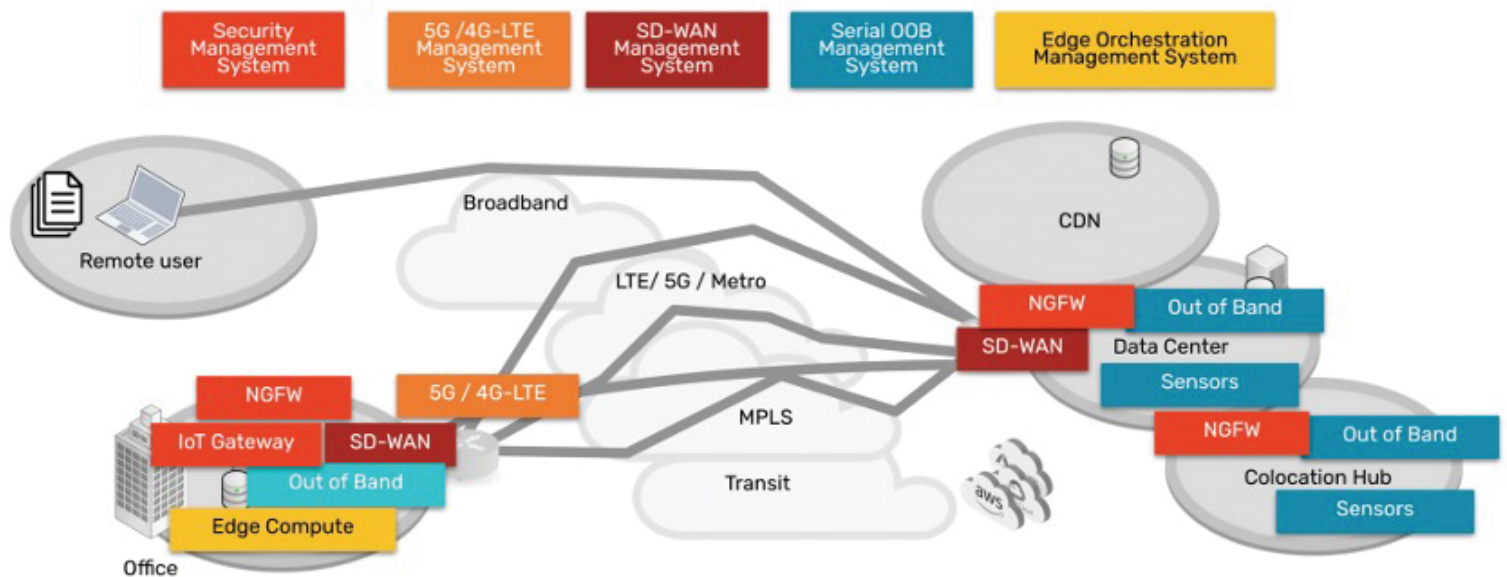
There are 3 Challenges to Overcome

Regardless of economic downturn, limited staff, or site access restrictions, IT teams are already overwhelmed by three challenges:

- As infrastructure grows, teams face an increasing operational workload involving configuration management, troubleshooting, and recovering equipment

- Despite available patches from security and connectivity solution vendors, teams withhold upgrading due to the possibility of causing breakages. This leaves infrastructure outdated and vulnerable

- Automation is recognized as the solution to the challenges above, but teams are reluctant to automate because they don't have the adequate infrastructure in place. Automating incorrectly on the production network can cause catastrophic outages

zpe

Solution : The Network Automation Blueprint
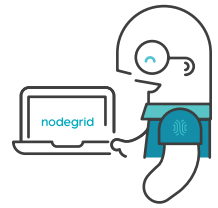
To overcome these three challenges, organizations can follow the Network Automation Blueprint. This management network design pattern was developed with direct input from tech giants, and is used to significantly reduce the need for human intervention.

This blueprint enables what Gartner calls 'hyperautomation.' Hyperautomation is the automating of all processes and workflows, which significantly reduces the need for human intervention and the risk of errors.

Network Automation helps teams:

- Scale their capabilities and reduce manual workloads

- Remotely test configurations to ensure successful upgrades

- Gain an out-of-band safety net for recovering from automation errors

This blueprint outlines the necessary infrastructure components, such as the source of truth, version control systems, out-of-band management network, and many others. These are intelligently arranged by four building blocks that are the foundation of the Network Automation blueprint - **AI Ops, Orchestration & Automation, Automation Infrastructure, and IT/OT Production Infrastructure**

Building Blocks of Hyperautomation

Hyperautomation consists of 4 main building blocks:

AI Ops

This building block consists of the infrastructure that enables more efficient management of automation, such as machine learning and artificial intelligence to take automated actions.

Orchestration & Automation

This building block consists of the Orchestration and Automation infrastructure that enables management of the target infrastructure. To enable hyperconverged automation, this layer must support IT infrastructure like servers, routers, firewalls, and OT (Operational Technology) infrastructure, which includes a wide range of industrial systems, building management systems, power, sensors, and IoT.
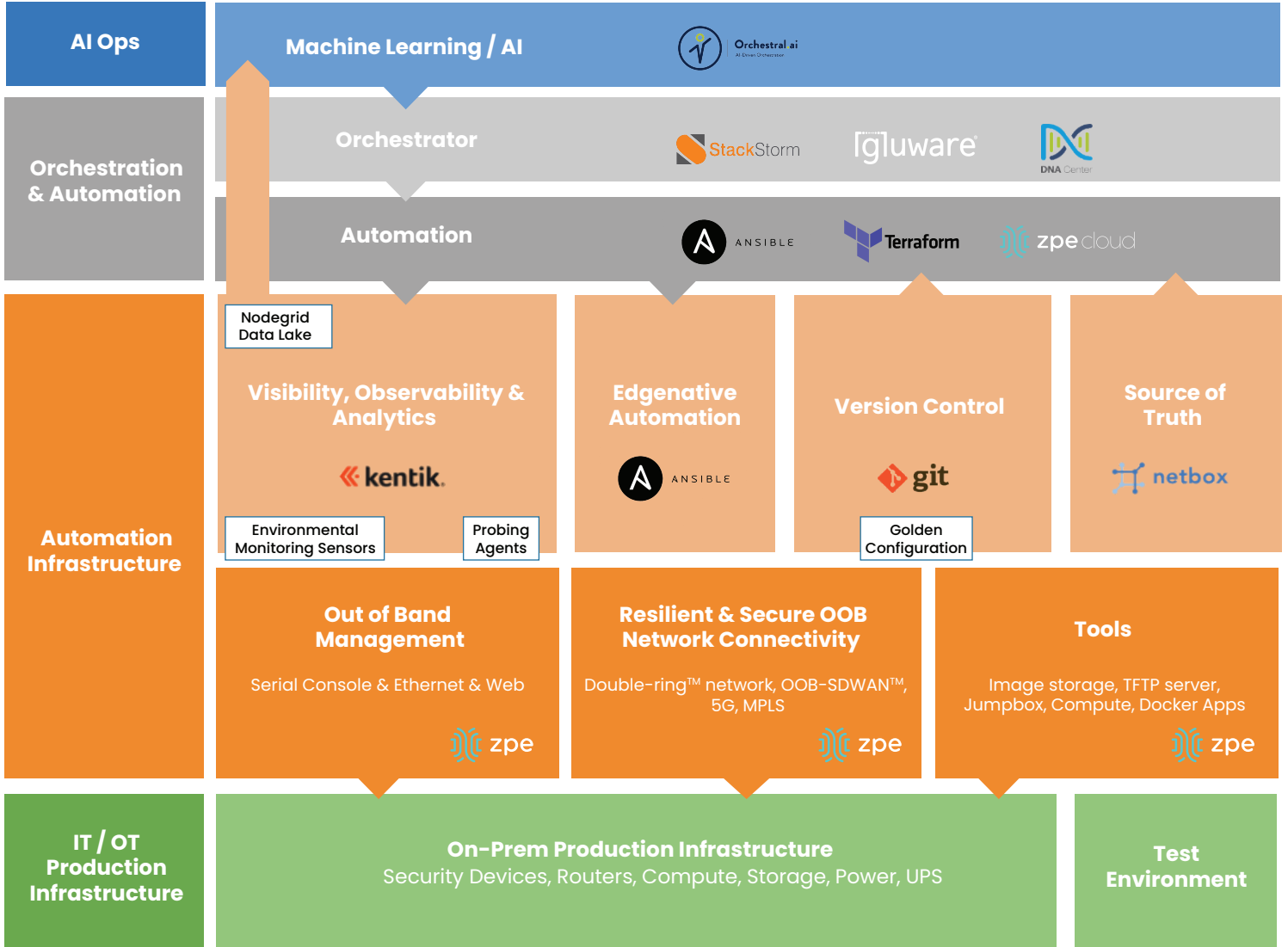
Automation Infrastructure

This building block provides the integration and connectivity from the Orchestration and Automation layer to the IT/OT Production layer. This consists of the hardware, which provides secure and resilient connections such as 4G/5G devices, VPN, IP-based access, and Serial Console connections; and software that enables the automation to occur, which includes file servers, jump boxes, source of truth, and Version Control systems.

IT / OT Production Infrastructure

This building block consists of the existing enterprise production infrastructure and operation infrastructure that needs to get automated, such as servers, routers, switches, applications, as well as cloud infrastructure and building management systems, Industrial solutions and IoT

5

zpe

Network Automation Blueprint
How the building blocks stack up

AI Ops	**Machine Learning / AI** — Orchestral ai	

Orchestration & Automation

Orchestrator — StackStorm, gluware, DNA Center

Automation — ANSIBLE, Terraform, zpe cloud

Nodegrid Data Lake

Automation Infrastructure

Visibility, Observability & Analytics — kentik.
- Environmental Monitoring Sensors
- Probing Agents

Edgenative Automation — ANSIBLE

Version Control — git
- Golden Configuration

Source of Truth — netbox

Out of Band Management
Serial Console & Ethernet & Web
zpe

Resilient & Secure OOB Network Connectivity
Double-ring™ network, OOB-SDWAN™, 5G, MPLS
zpe

Tools
Image storage, TFTP server, Jumpbox, Compute, Docker Apps
zpe

IT / OT Production Infrastructure

On-Prem Production Infrastructure
Security Devices, Routers, Compute, Storage, Power, UPS

Test Environment

zpe

6

Implement the Building Blocks Using this Checklist

Lay the groundwork for your hyperautomation implementation by following this checklist:

AI Ops

- [ ] Ensure AI Ops tools can collect & analyze rich sets of information in real time, including configuration data, network state data, environmental data, & physical state of the infrastructure

Orchestration & Automation

- [ ] Automation must support all devices in hybrid infrastructure
- [ ] Ensure backup connectivity & workloads for recovery from errors
- [ ] Ensure support for distributed, asynchronous automation

Automation Infrastructure

- [ ] Automation network infrastructure is truly separate from production environment (a.k.a. Double-ring™ network)
- [ ] Ensure Gen 3 out-of-band (OOB) is in place to support automation
- [ ] Enable edge native automation for resilience against outages

IT / OT Production Infrastructure

- [ ] Connect all management ports including serial console ports to OOB
- [ ] Ensure security for hardware, software, & management layers
- [ ] Enable secure power cycle using Gen 3 OOB connected to PDU

Sign up for the Full Blueprint & Webinar

This sneak peek shows you the necessary building blocks for automating your infrastructure.

The next step is to get the full blueprint for an in-depth look at all the pieces that go into these building blocks — from version control, to automation tools and out-of-band management

Get the full blueprint now
https://www.zpesystems.com/network-automation-blueprint
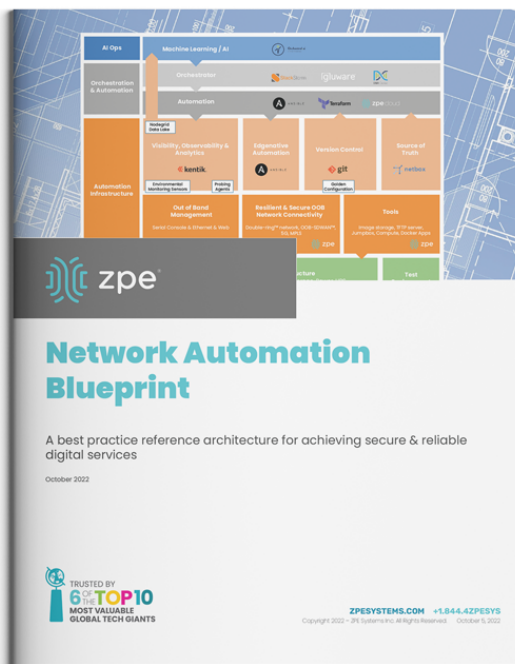
The full Network Automation Blueprint gives you an in-depth look at all the pieces inside these building blocks — from version control, to out-of-band and automation infrastructure.

Visit zpesystems.com/network-automation-blueprint to download the full reference architecture best practices. This architecture is trusted by tech giants and now tailored to help any company provide reliable digital services.

Follow us on LinkedIn and Twitter for more updates.