MYRIAD360

Network Automation Pipelines – From Zero to Hero

Jon Howe: Principal Solution Architect

Agenda

Why people-centric automation matters

Pipeline at a glance

Core stages deep dive

Live Demo

The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency.

- Bill Gates

Who is your audience?

- Understand how your consumers do their job today?
  - Network Equipment
  - Ecosystem (Secrets, IPAM, CMDB)
- Humans need trust + visibility
- No tickets? No proof. No audit. No compliance.

Pain

- Multiple handoffs, messy approvals
- Drift between “intent” and “reality”
- No traceability -> no trust

Promise

- Centralized requests and governance (Jira)
- Inventory validation (Nautobot)
- Automated audit trail (GH Actions)
- Faster, safer changes

Pipeline At A Glance

End to End Architecture

1. **User Needs a change**
2. Jira: Request Details and approval
3. GitHub Actions: orchestrates
4. Ansible: executes
5. Nautobot: inventory
6. Palo Alto: enforces
7. GitHub Actions Updates Ticket

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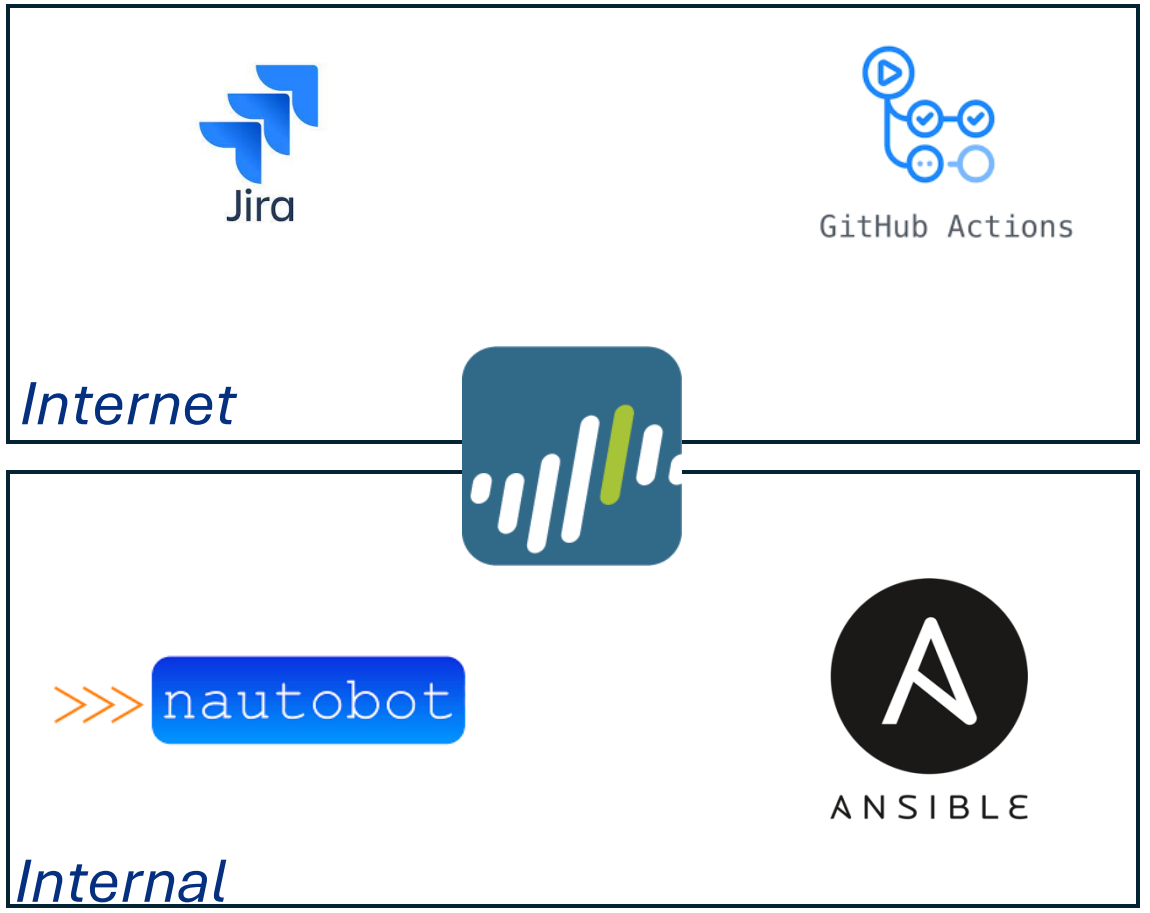

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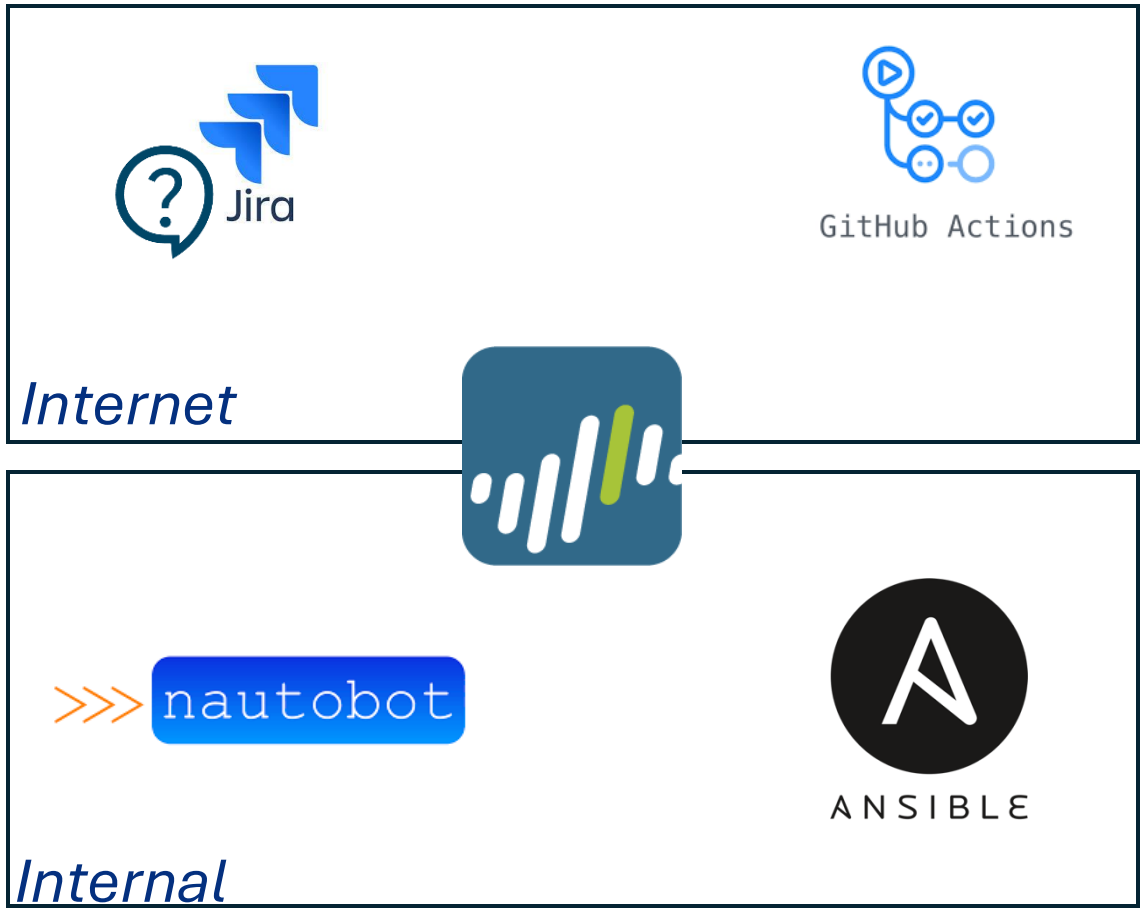

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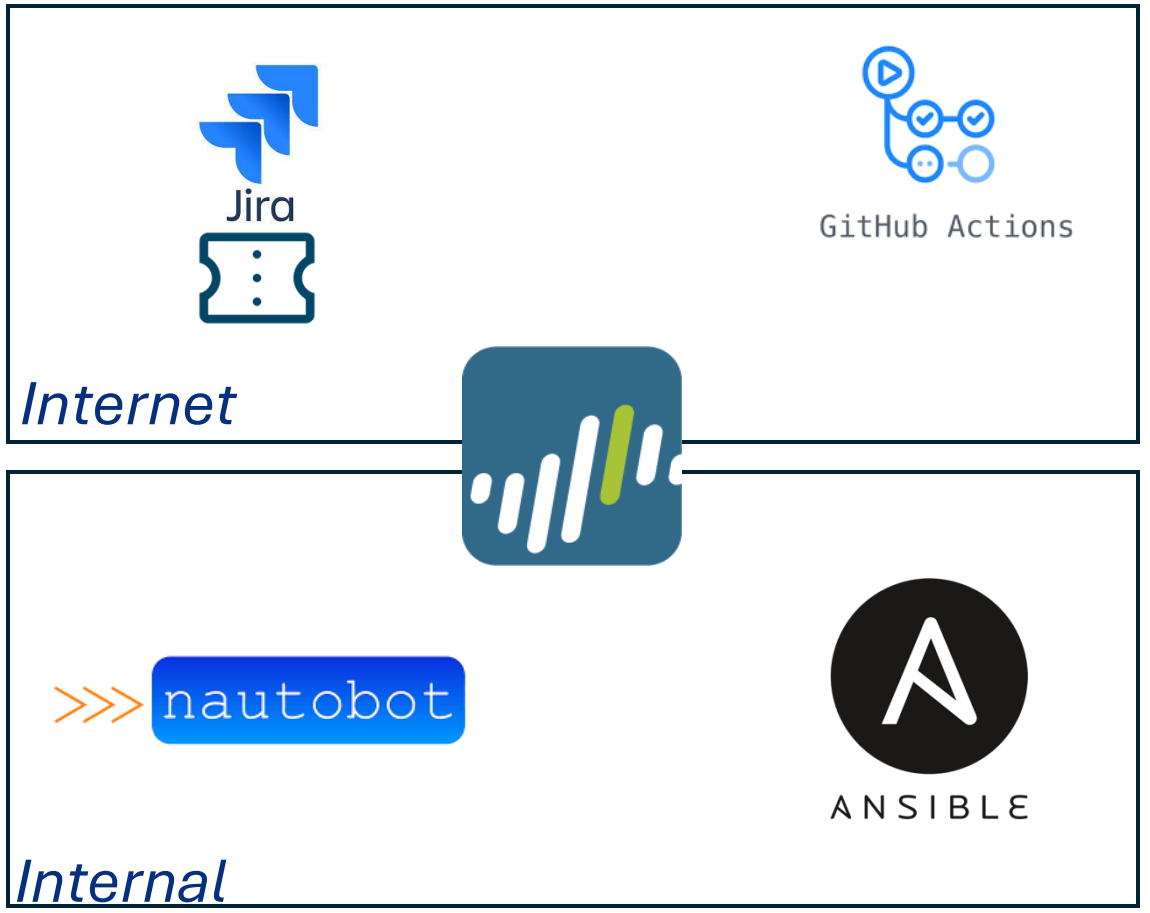

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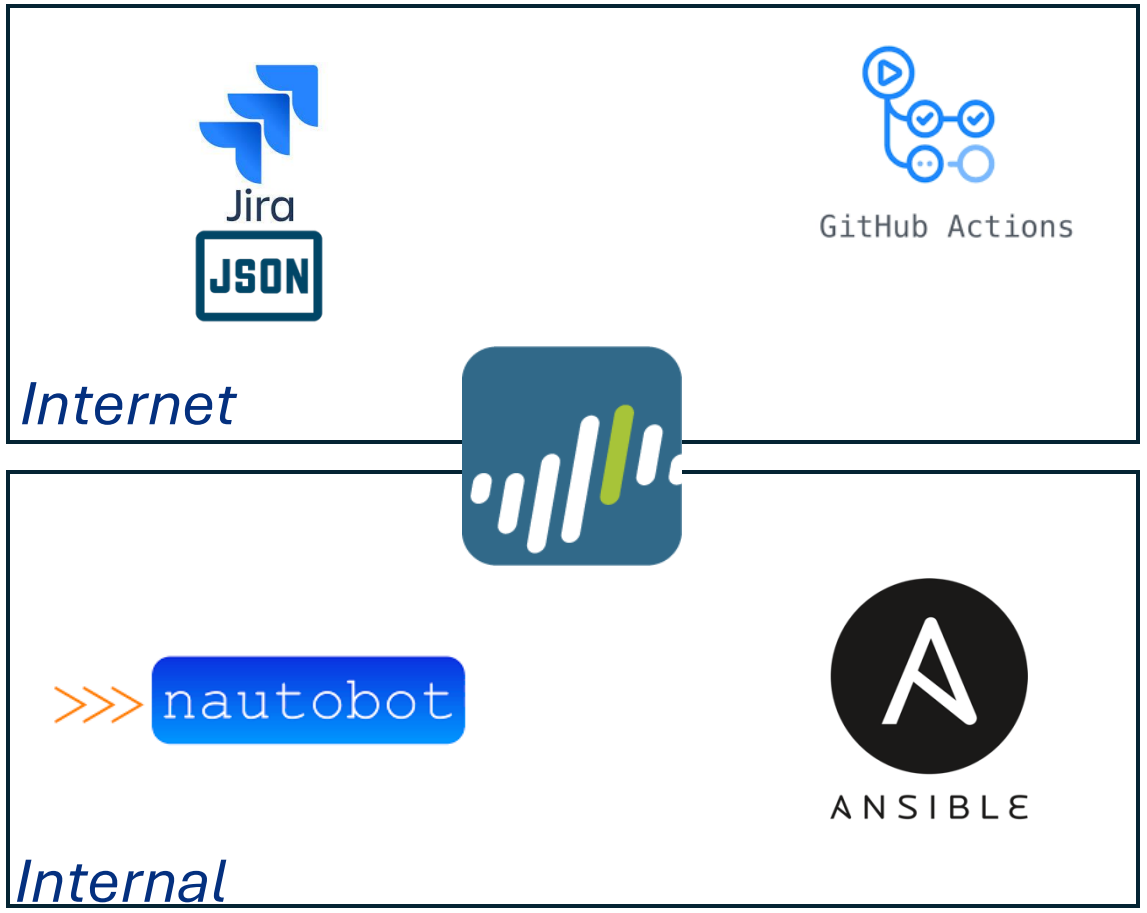

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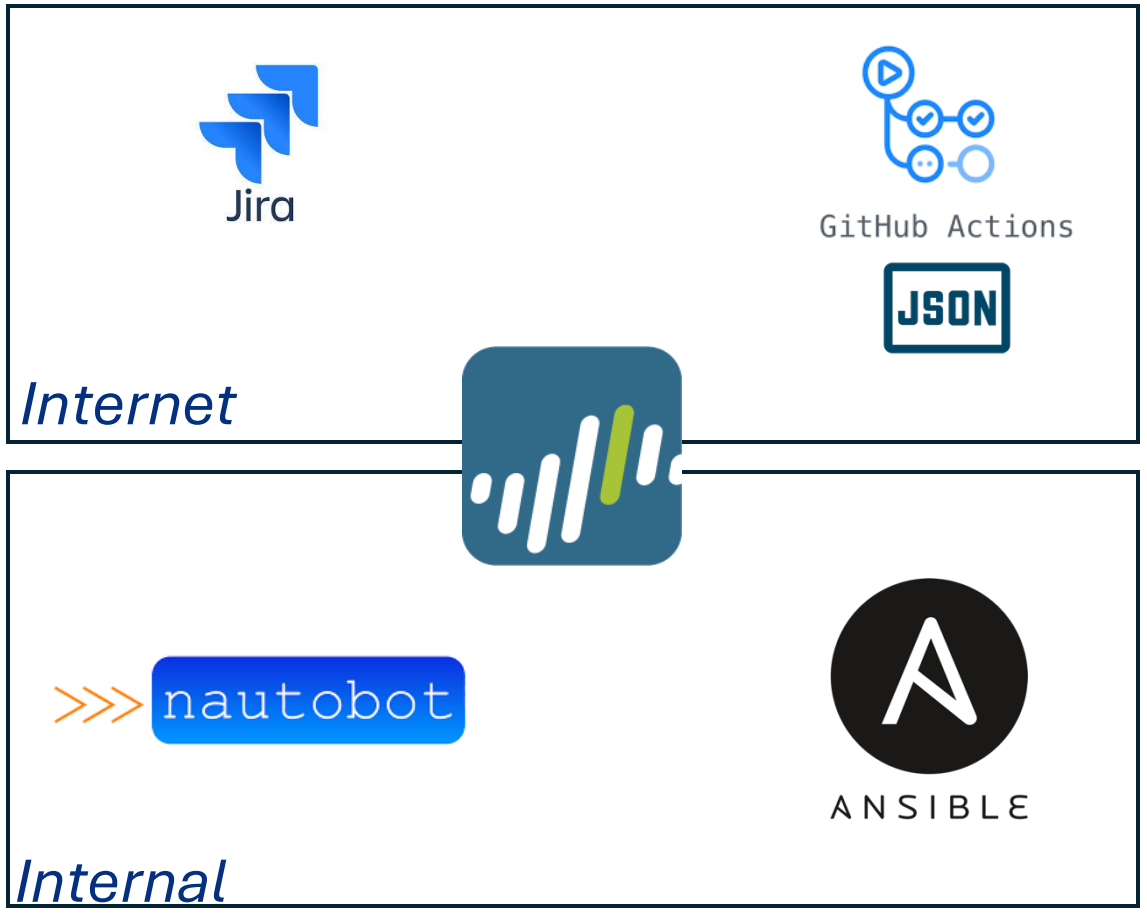

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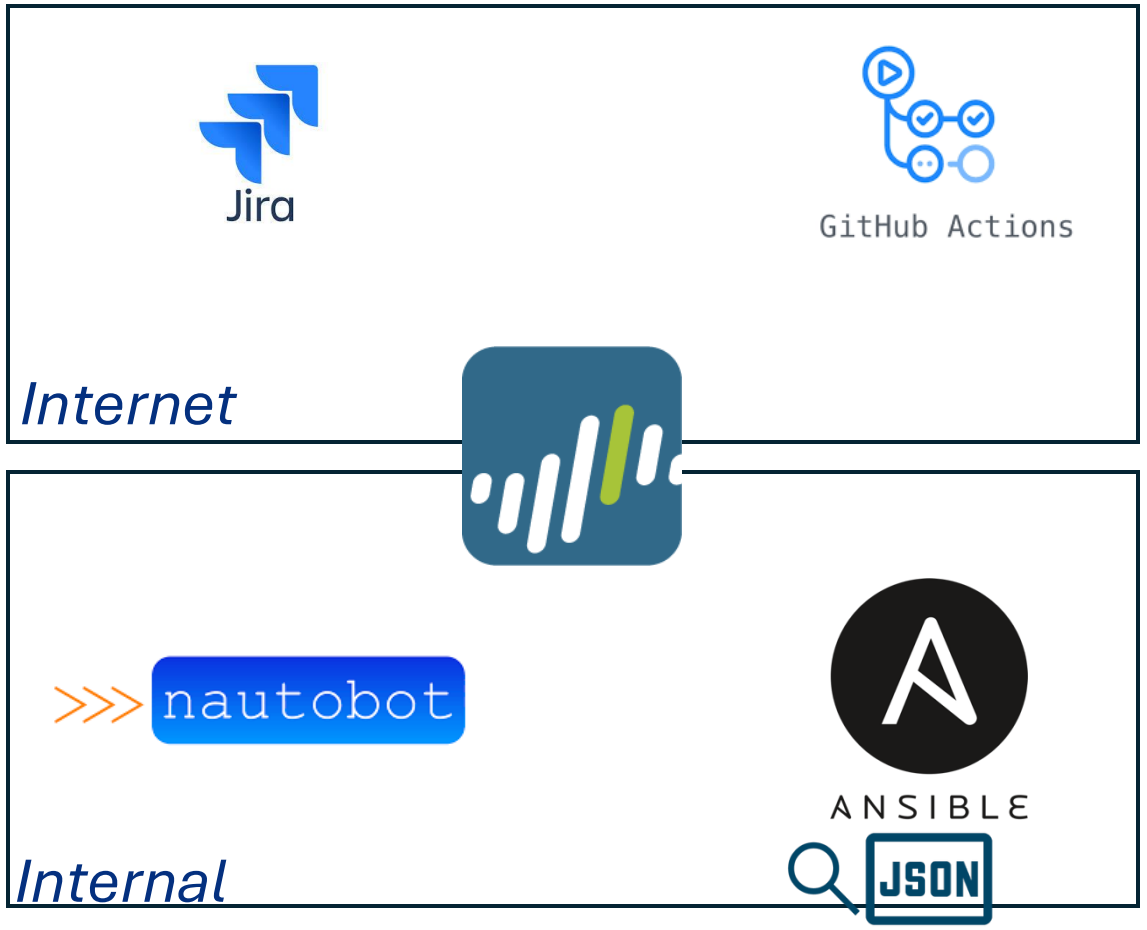

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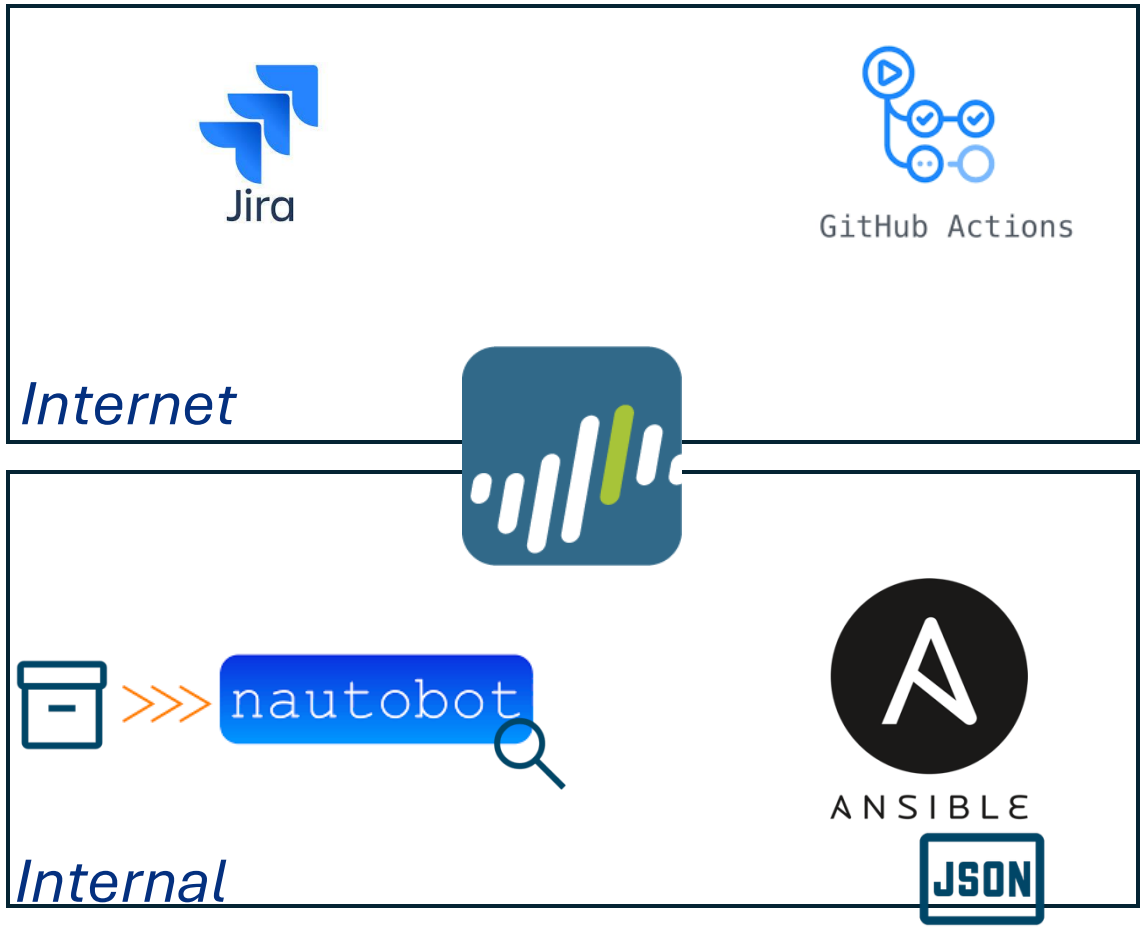

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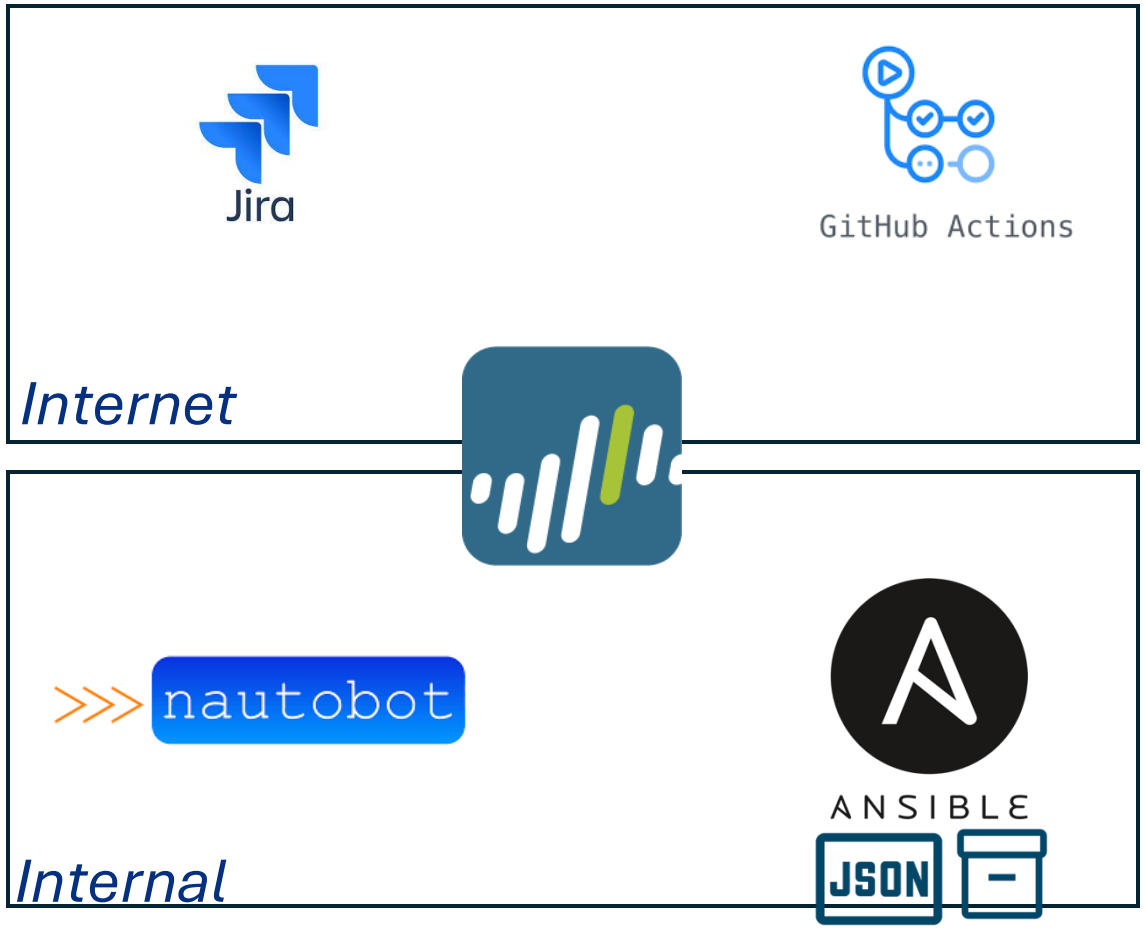

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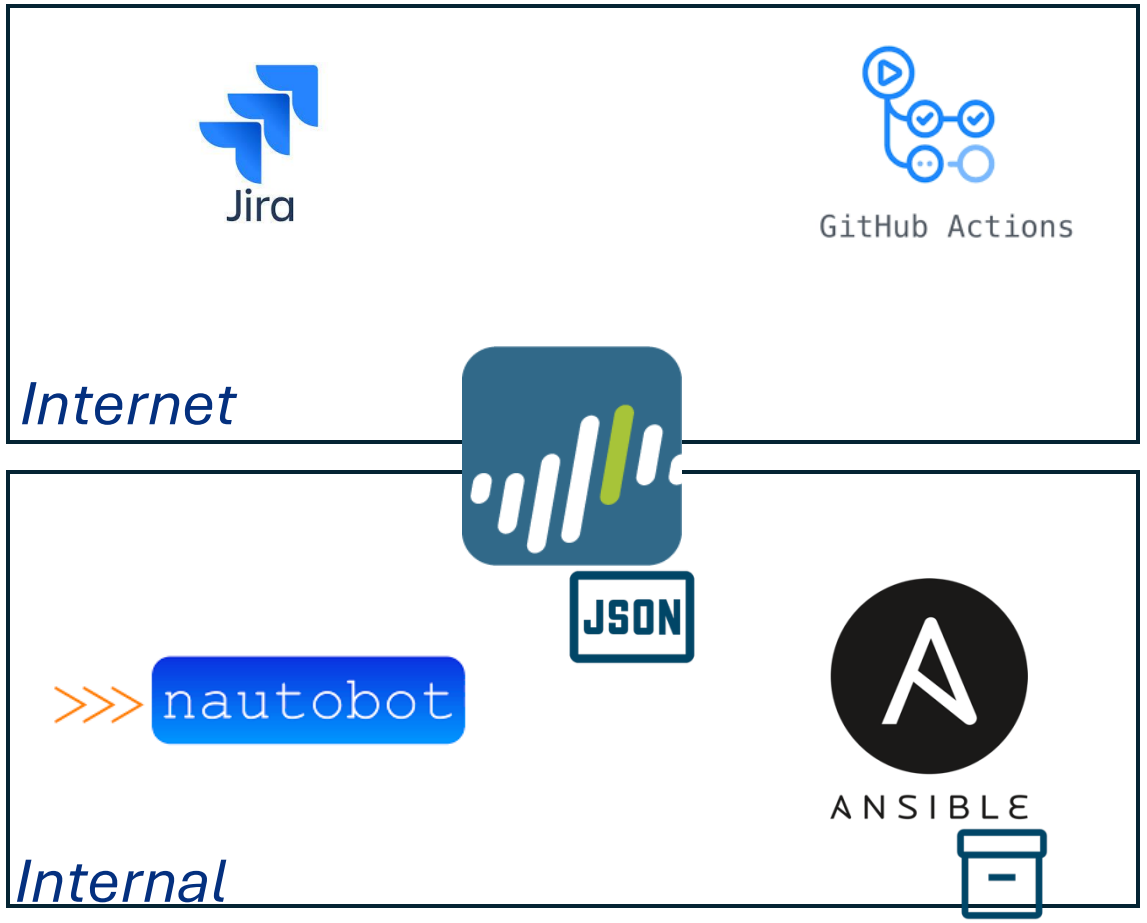

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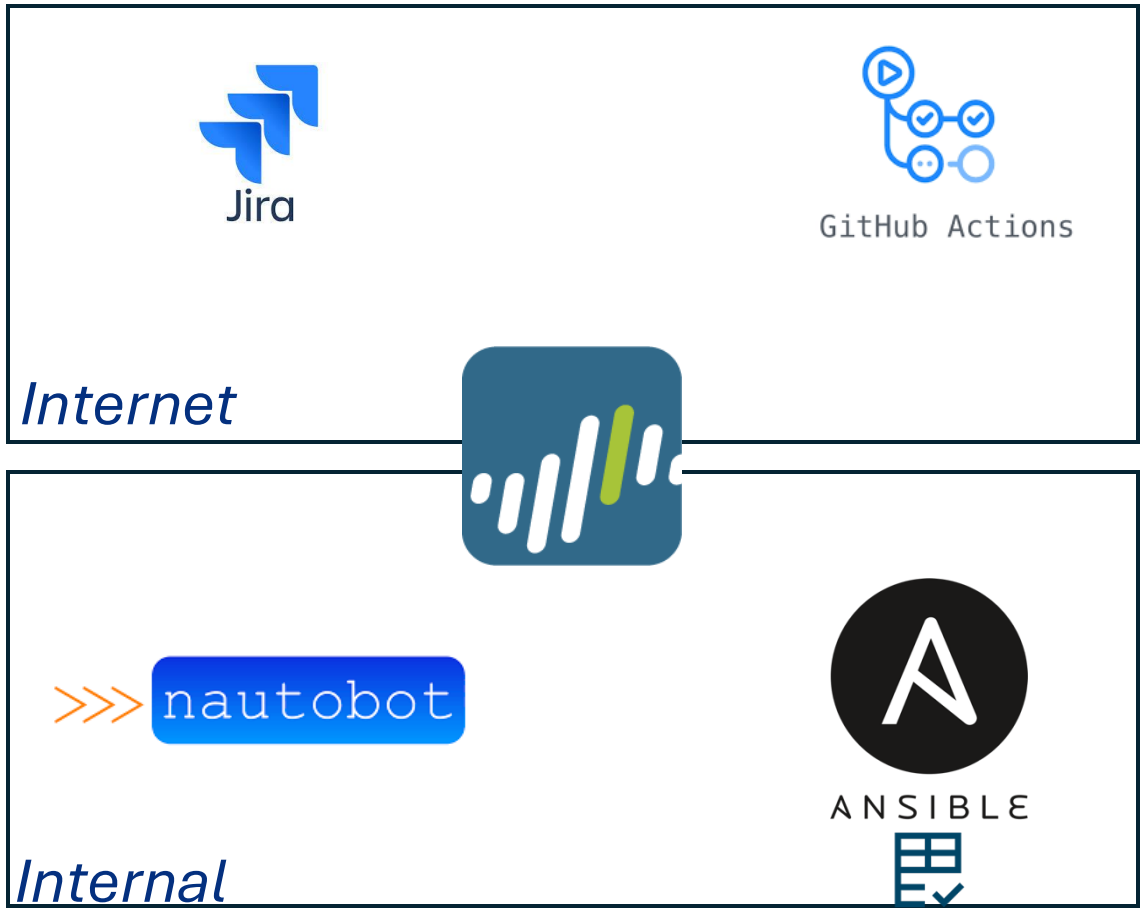

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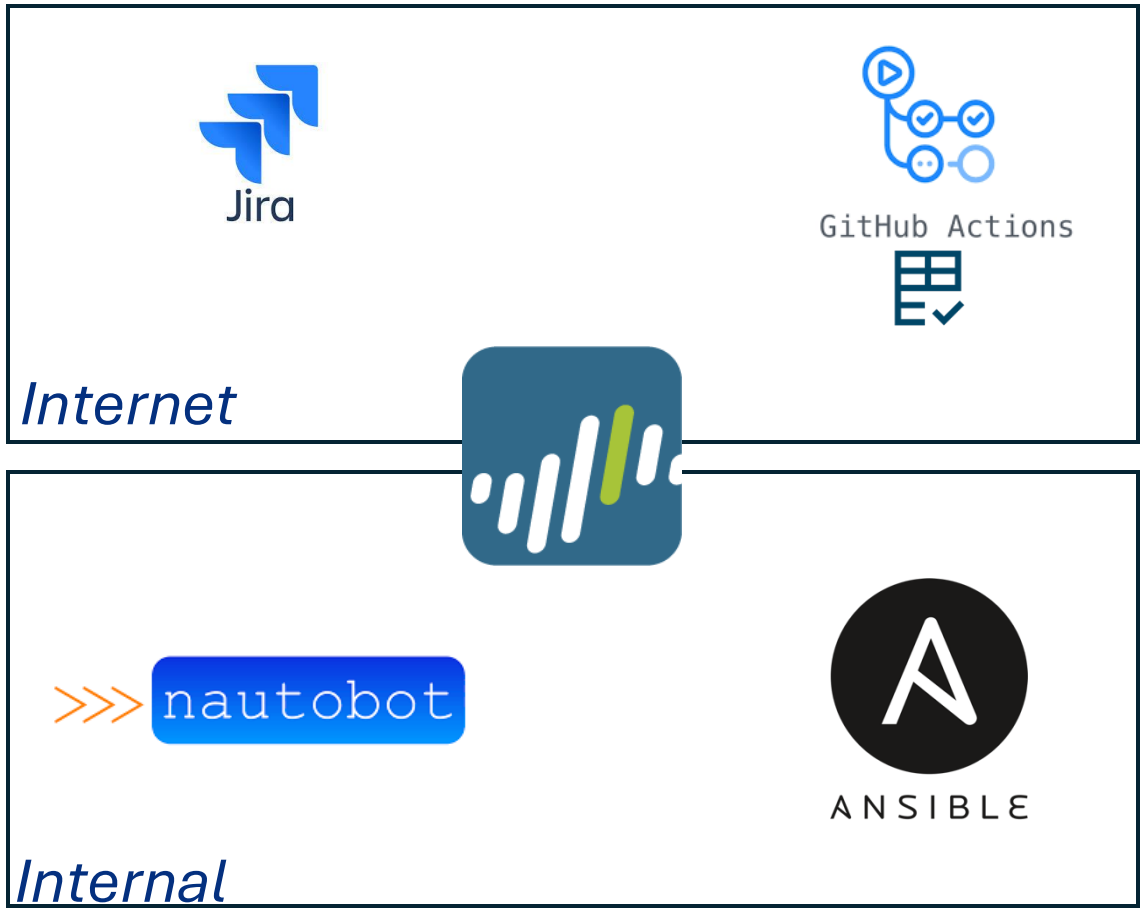

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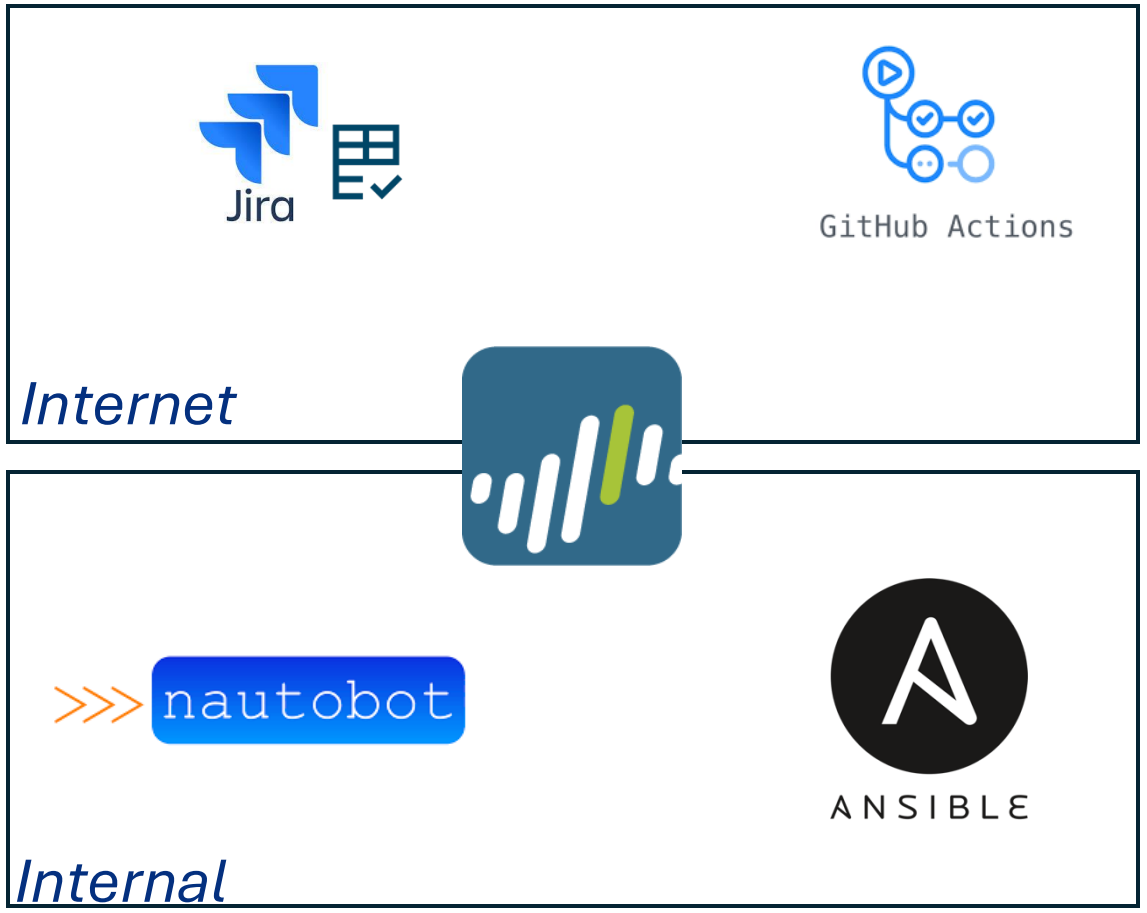

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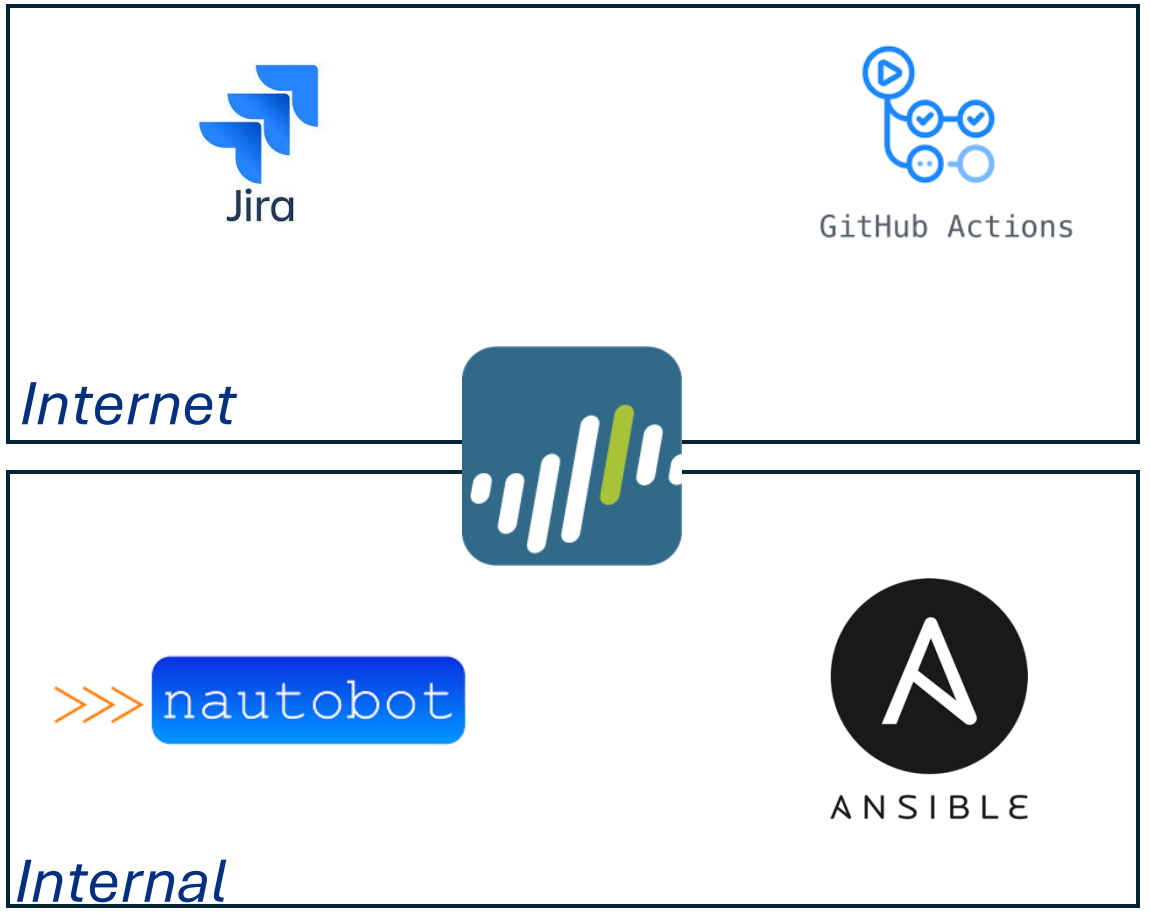

Core Stages

Stage 1: Jira Service Management

- Custom form: devices, type, rollback
- Approvals: auto or manual
- Ticket moves to “Ready for Change” status
- Metadata = playbook variables
- Full ticket history for audits

Stage 2: GitHub Actions Orchestration

- Scheduled job polls Jira
- Find “Ready for Change” tickets
- Parse fields and trigger workflows
- Execute Ansible Code
- Update status of Jira ticket

Stage 3: Nautobot Validation + Ansible Execution

- Pull inventory from Nautobot
- Dynamic inventory for Ansible
- Dry-run playbook with diffs
- Make changes to the environment

Stage 4: Configuration Enforcement & Traceability

Enforcement:

- Firewall objects and NAT rules created dynamically using Ansible's Palo Alto modules
- Playbooks executed directly on EC2 instance
- Post-deployment Palo Alto firewall configuration commit with validation

Traceability:

- GitHub Actions logs available for troubleshooting and audit
- Ansible execution results (success/failure, detailed logging) captured clearly
- Automatic Jira ticket state transitions to "Confirmed Deployed" after successful changes

Demo

This site can't be reached

3.135.53.23 took too long to respond.

Try:

- Checking the connection
- Checking the proxy and the firewall

ERR_CONNECTION_TIMED_OUT

Details

Reload

Takeaways & Next Steps

Making it Real

What we did and where we're going

Best Practices & Outcomes

- Store secrets in GitHub Secrets
- Linting / Syntax Checks and Dry Run before deployment
- Enforce PR Reviews on Main Branches

What we Gained

- Faster MTTR via Automation
- Better audit & config compliance
- Full lifecycle visibility = user trust

What's Next

- Nautobot: firewall rule DB & intent validation
- Rollback and self-healing workflows
- Analytics for drift and policy insight
- Jira: Include logs

Resources & Getting Started

- **Sample repo – QR Code**
  - GitHub repo (Actions workflows, Ansible playbooks)
  - Nautobot inventory & Jira integration scripts
- **Quick checklist:**
  - Jira project configured & statuses ready
  - GitHub Actions workflow deployed
  - Terraform-built EC2 + Nautobot reachable
  - EC2 connectivity to Palo Alto firewall confirmed
  - Credentials stored securely

Thank You!