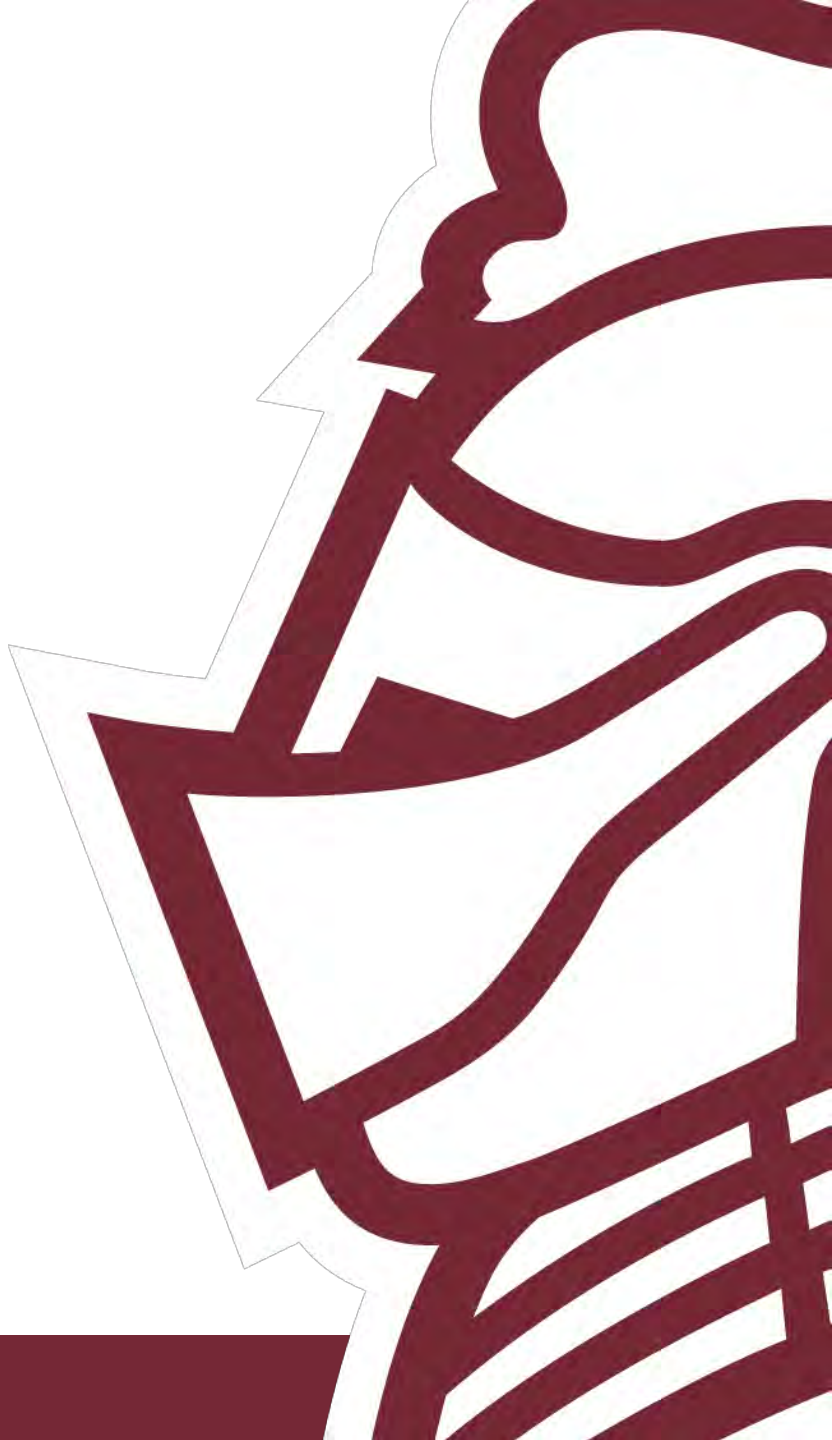
Building Your IT Toolbox



Who Am I?

- Tony Morrow
  - https://lookanotherblog.com
- Principal Solutions Architect @ Bellarmine University
- 16 years working at Bellarmine
- Focus
  - Networking
  - Wireless
  - Servers/Virtualization
  - Systems Integration
  - Problem Solving
  - PowerShell, PowerShell, PowerShell

Topics

- Who Am I?
- What is *Free*?
- Asset Inventory with Netbox
- System Monitoring with Zabbix
- Logging with Elastic
- Other tools

Disclaimer 😉

- I am not a Microsoft MVP or Partner
- All technologies showcased are using free, trial, or paid licenses
- All the opinions here are my own

Free (not that *free*, but also that *free*)

- What do I mean by *free*?
  - Free to run the software however you want
  - Free to make changes to the software
  - Free to share the software and any changes

- It doesn't necessarily mean the software is $0

- But also, yes, there is no cost to use the software
  - Because it is licensed under an open source license
    - Netbox: Apache 2.0 (https://github.com/netbox-community/netbox?tab=Apache-2.0-1-ov-file#readme)
    - Zabbix: AGPLv3 (https://www.zabbix.com/license)
    - Elastic*: AGPLv3/Elastic License 2.0 (https://www.elastic.co/pricing/faq/licensing) *it's complicated
  - Most developers provide compiled versions of the software making them easier to run

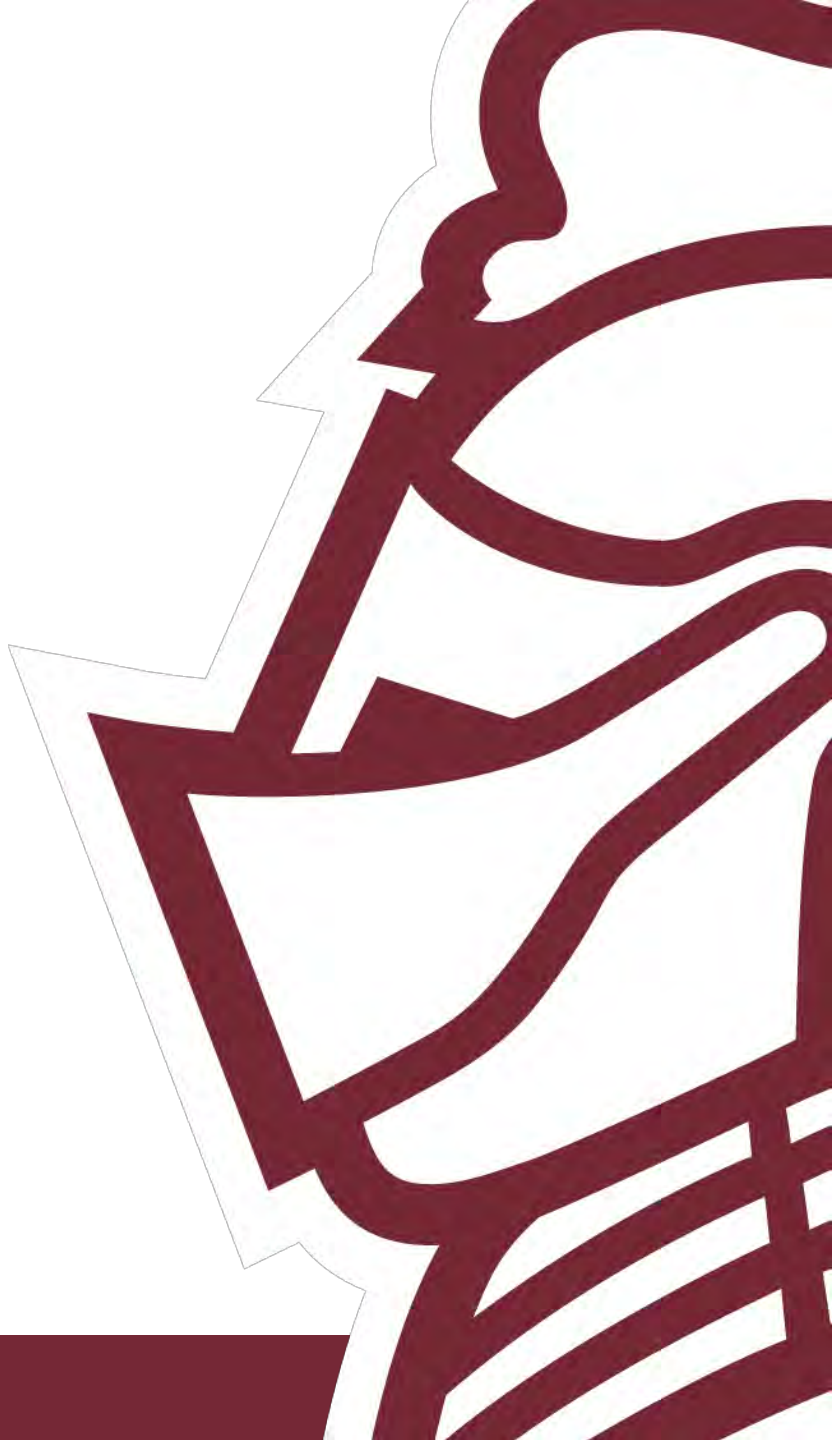
And also *Free*

- You are responsible for the
  - care
  - feeding
  - cleaning up the poop on the carpet

Asset Inventory with Netbox

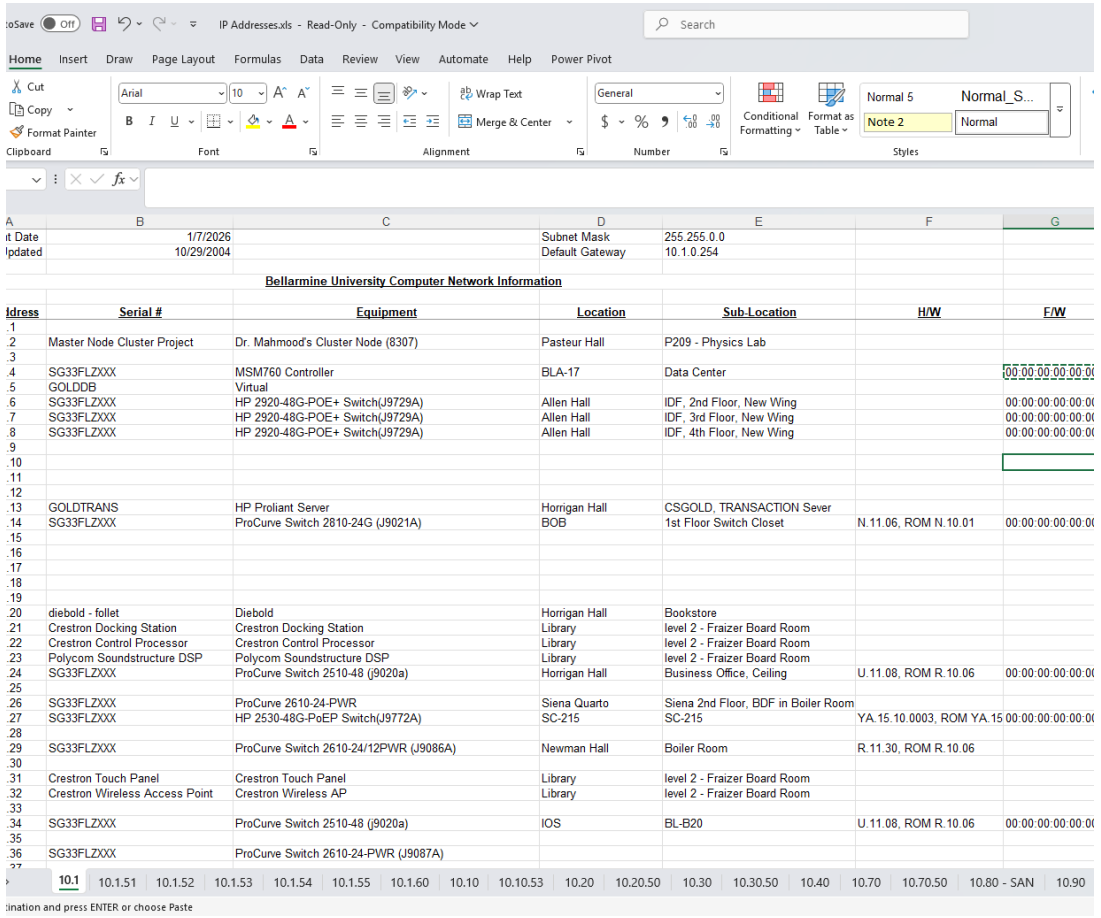
Community Edition

https://github.com/netbox-community/netbox



Old Method: Spreadsheets

- Issues:
  - Multiple people couldn't edit at once
  - Didn't capture all the device information
  - Couldn't tell us what was connected to what



IP Addresses.xls - Read-Only - Compatibility Mode

t Date	1/7/2026		Subnet Mask	255.255.0.0		
pdated	10/29/2004		Default Gateway	10.1.0.254		

Bellarmine University Computer Network Information

dress	Serial #	Equipment	Location	Sub-Location	H/W	F/W
.1						
.2	Master Node Cluster Project	Dr. Mahmood's Cluster Node (8307)	Pasteur Hall	P209 - Physics Lab		
.3						
.4	SG33FLZXXX	MSM760 Controller	BLA-17	Data Center		00:00:00:00:00:0
.5	GOLDDB	Virtual				
.6	SG33FLZXXX	HP 2920-48G-POE+ Switch(J9729A)	Allen Hall	IDF, 2nd Floor, New Wing		00:00:00:00:00:0
.7	SG33FLZXXX	HP 2920-48G-POE+ Switch(J9729A)	Allen Hall	IDF, 3rd Floor, New Wing		00:00:00:00:00:0
.8	SG33FLZXXX	HP 2920-48G-POE+ Switch(J9729A)	Allen Hall	IDF, 4th Floor, New Wing		00:00:00:00:00:0
.9						
.10						
.11						
.12						
.13	GOLDTRANS	HP Proliant Server	Horrigan Hall	CSGOLD, TRANSACTION Sever		
.14	SG33FLZXXX	ProCurve Switch 2810-24G (J9021A)	BOB	1st Floor Switch Closet	N.11.06, ROM N.10.01	00:00:00:00:00:0
.15						
.16						
.17						
.18						
.19						
.20	diebold - follet	Diebold	Horrigan Hall	Bookstore		
.21	Crestron Docking Station	Crestron Docking Station	Library	level 2 - Fraizer Board Room		
.22	Crestron Control Processor	Crestron Control Processor	Library	level 2 - Fraizer Board Room		
.23	Polycom Soundstructure DSP	Polycom Soundstructure DSP	Library	level 2 - Fraizer Board Room		
.24	SG33FLZXXX	ProCurve Switch 2510-48 (j9020a)	Horrigan Hall	Business Office, Ceiling	U.11.08, ROM R.10.06	00:00:00:00:00:0
.25						
.26	SG33FLZXXX	ProCurve 2610-24-PWR	Siena Quarto	Siena 2nd Floor, BDF in Boiler Room		
.27	SG33FLZXXX	HP 2530-48G-PoEP Switch(J9772A)	SC-215	SC-215	YA.15.10.0003, ROM YA.15	00:00:00:00:00:0
.28						
.29	SG33FLZXXX	ProCurve Switch 2610-24/12PWR (J9086A)	Newman Hall	Boiler Room	R.11.30, ROM R.10.06	
.30						
.31	Crestron Touch Panel	Crestron Touch Panel	Library	level 2 - Fraizer Board Room		
.32	Crestron Wireless Access Point	Crestron Wireless AP	Library	level 2 - Fraizer Board Room		
.33						
.34	SG33FLZXXX	ProCurve Switch 2510-48 (j9020a)	IOS	BL-B20	U.11.08, ROM R.10.06	00:00:00:00:00:0
.35						
.36	SG33FLZXXX	ProCurve Switch 2610-24-PWR (J9087A)				

10.1 | 10.1.51 | 10.1.52 | 10.1.53 | 10.1.54 | 10.1.55 | 10.1.60 | 10.10 | 10.10.53 | 10.20 | 10.20.50 | 10.30 | 10.30.50 | 10.40 | 10.70 | 10.70.50 | 10.80 - SAN | 10.90

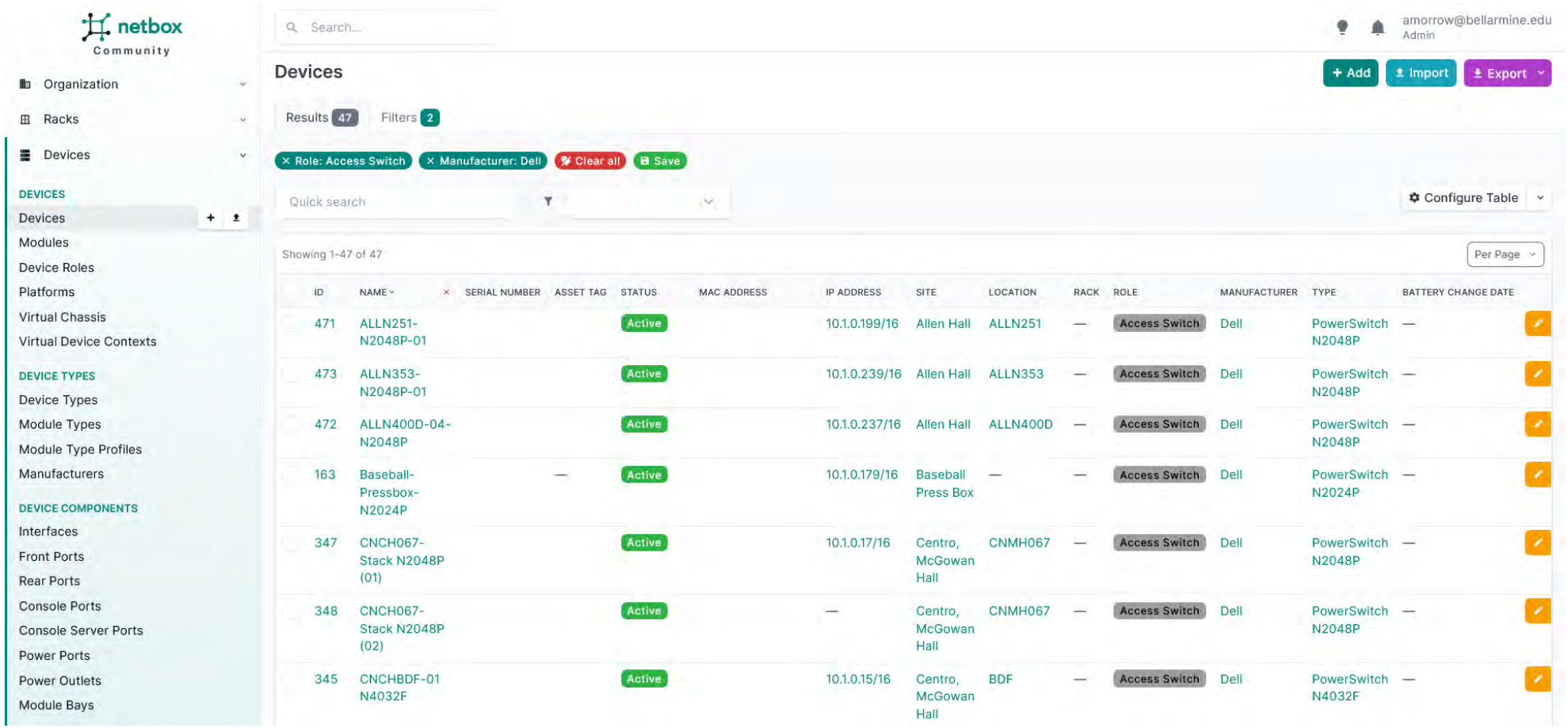
New Method: Netbox

- What is Netbox? https://netboxlabs.com/
  - The “source of truth” for your infrastructure and datacenter
  - Device inventory
    - Hardware type
    - Serial number
    - Asset Tag
    - Components
  - IP Management
    - Prefixes
    - ASNs
    - VLANs
  - Connections
    - Patch panels
    - Cables
    - Connections between devices
  - Racks
    - Hardware U space

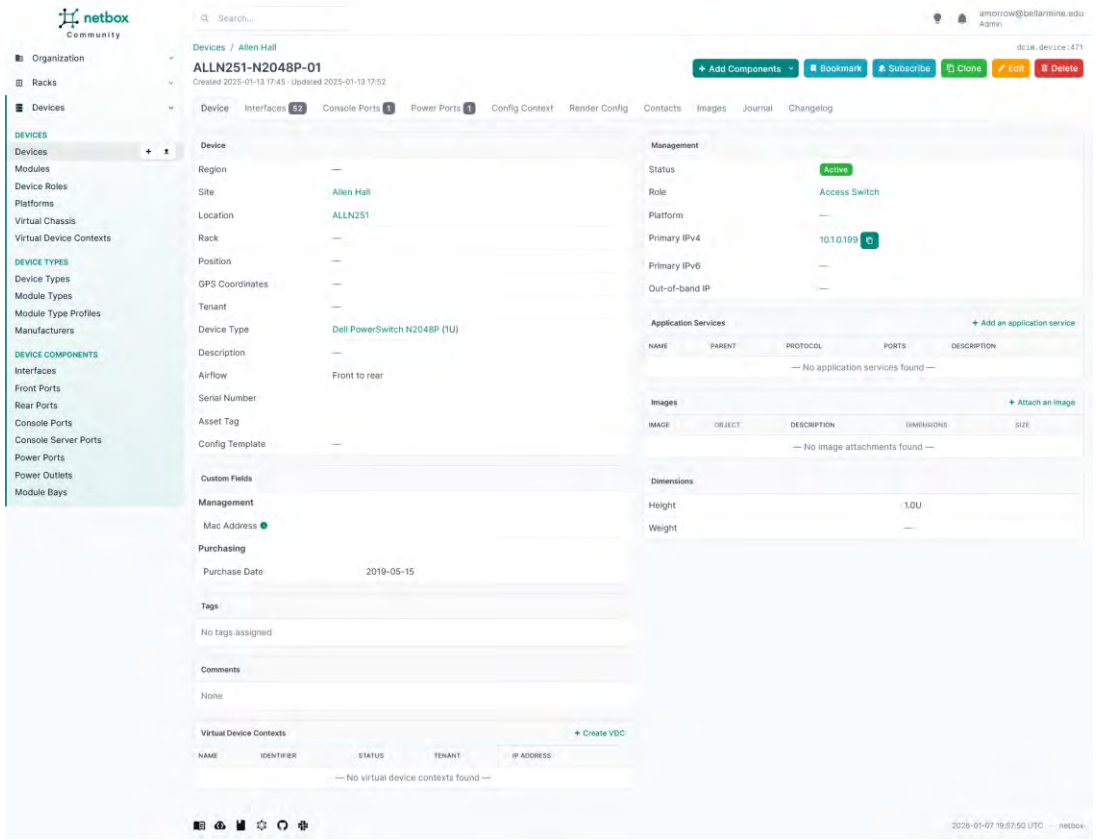
- What Netbox is not or doesn’t do?
  - Not a replacement for monitoring or logging
  - Doesn’t scan the network for devices*
  - Doesn’t automatically update device information or connections*

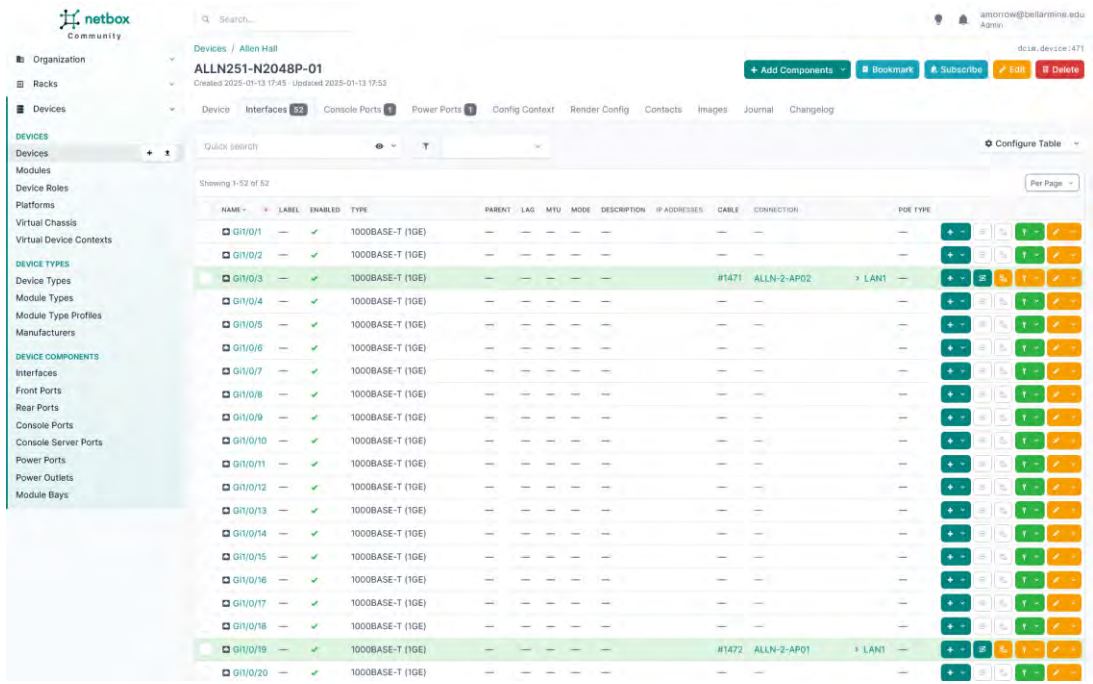
*Netbox Labs has announced new tools as part of their paid cloud offerings

Netbox Devices

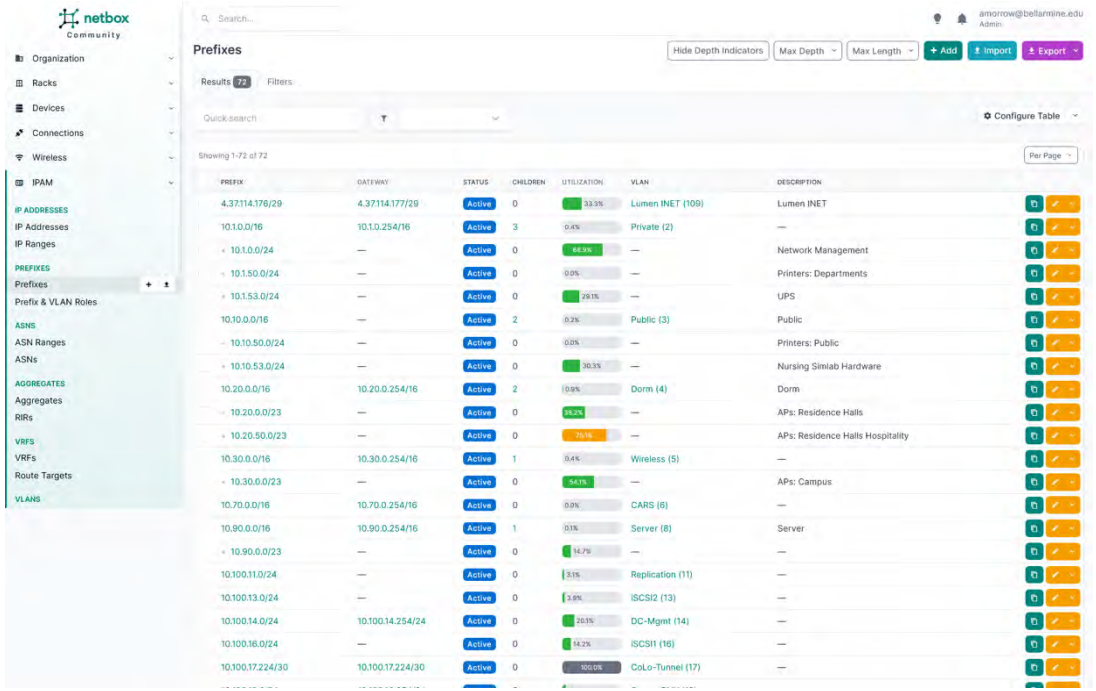


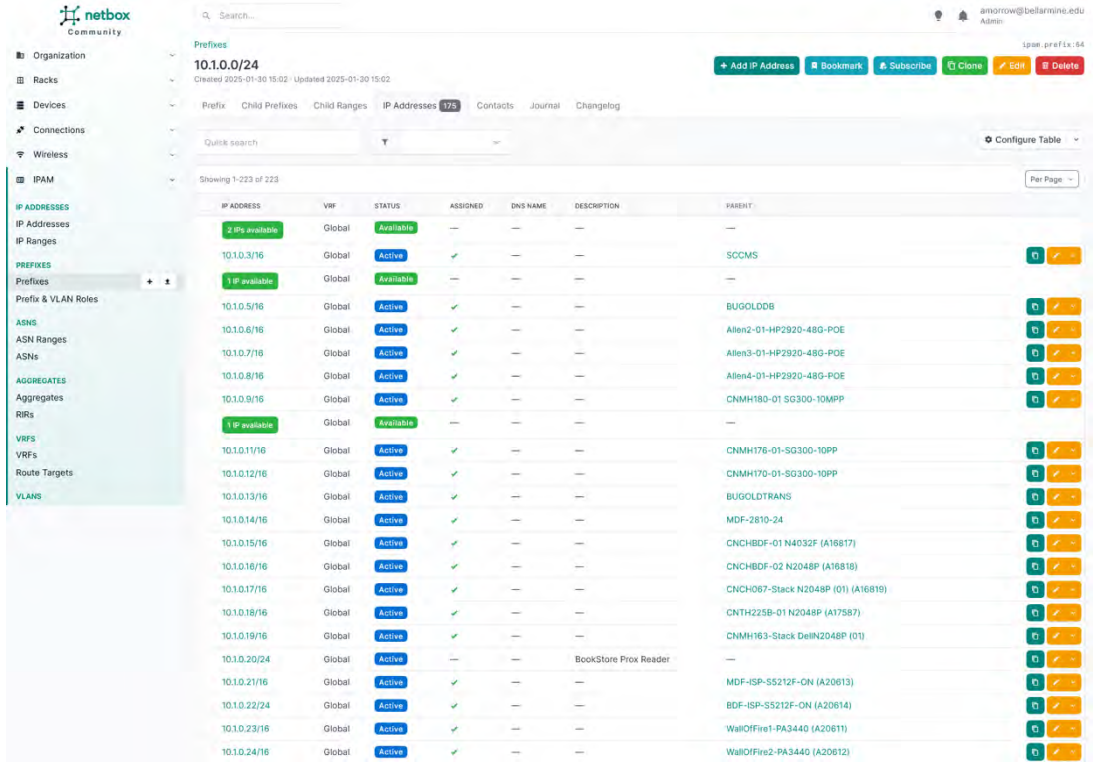
Netbox: Device Details



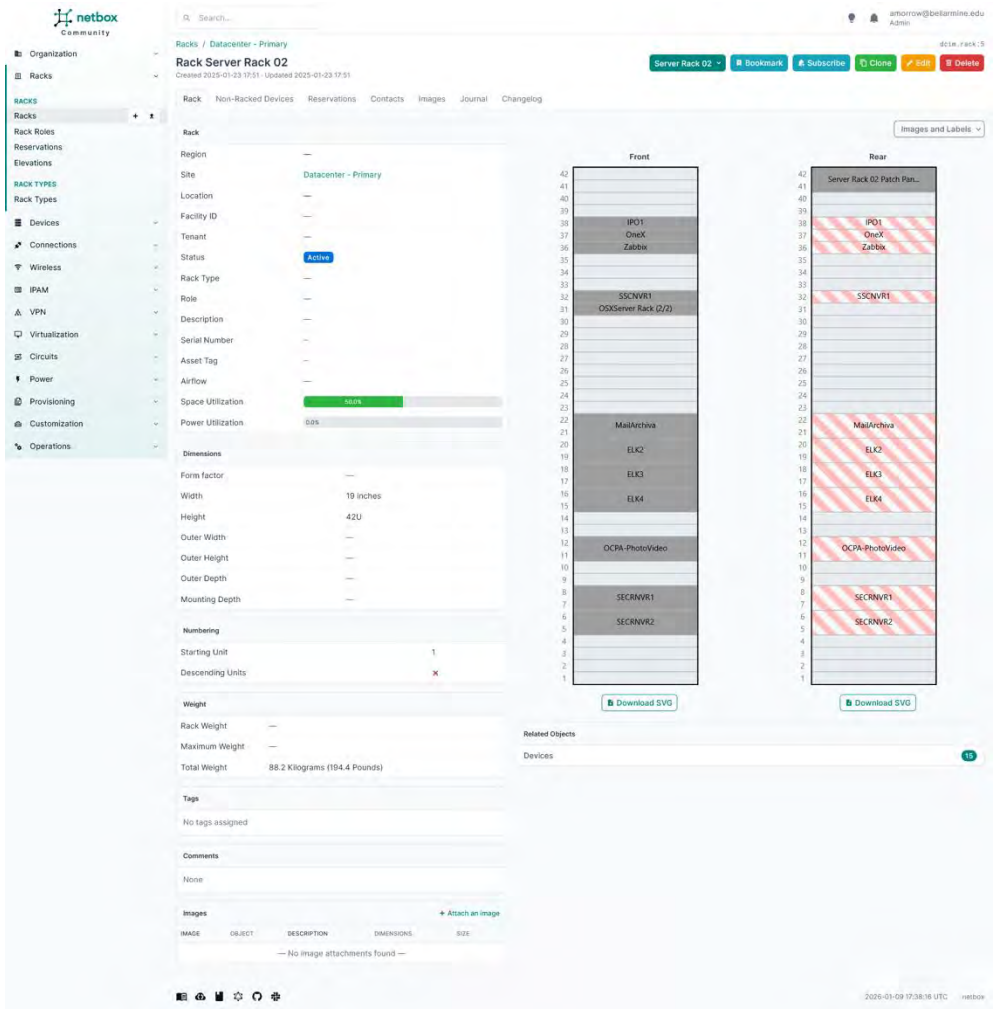


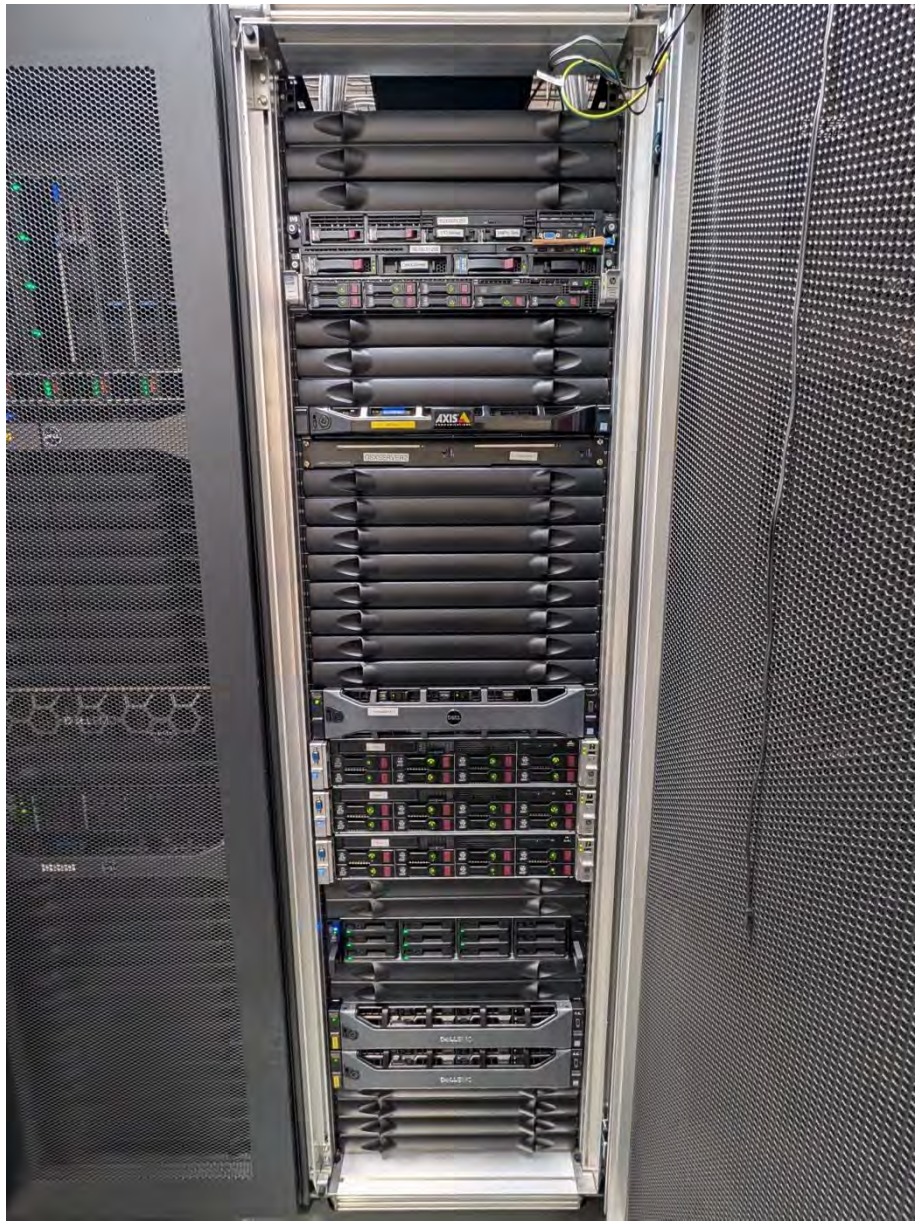
Netbox: IP Management





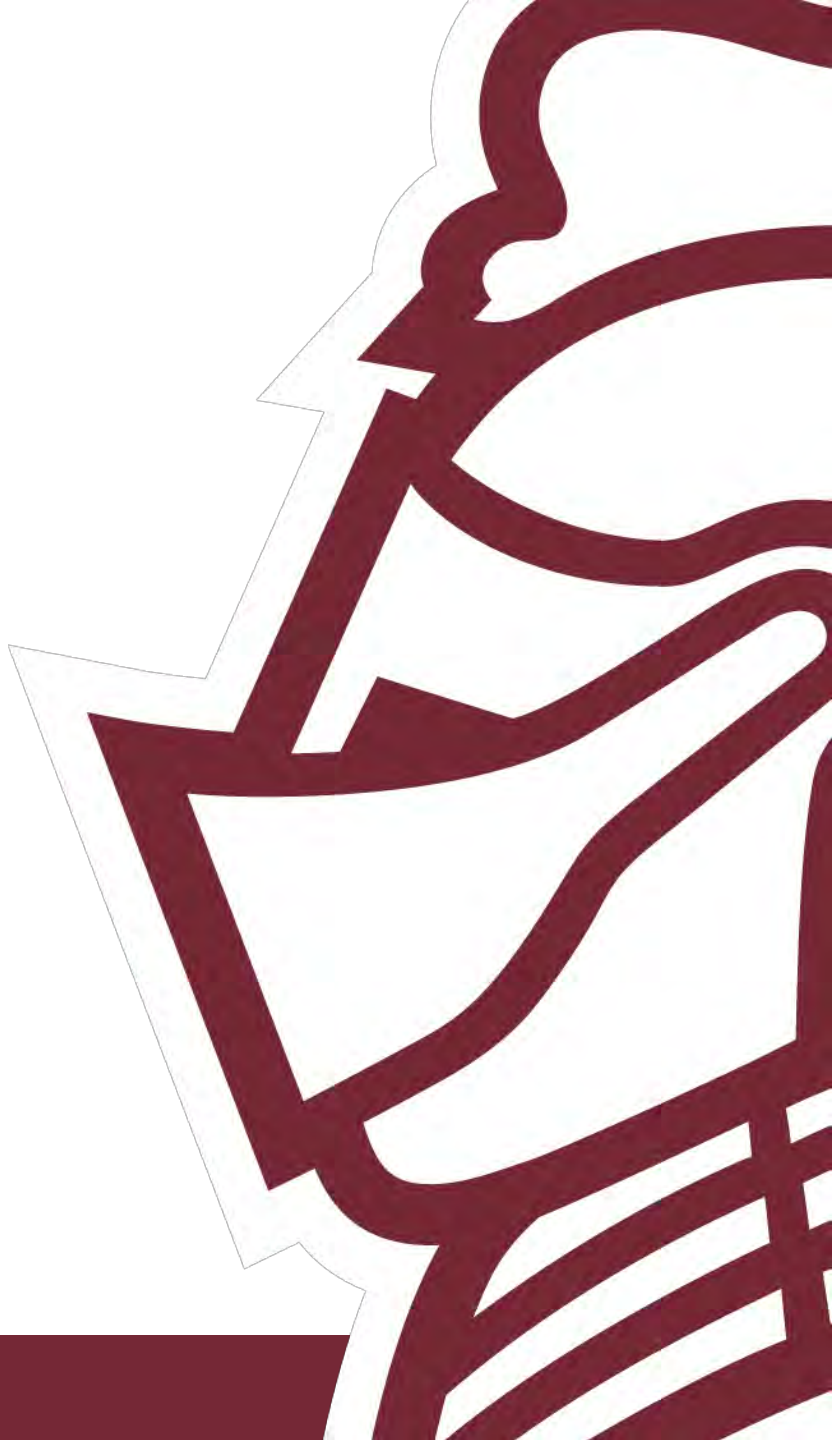
Netbox: Racks





Network/Service Monitoring with Zabbix

https://www.zabbix.com/

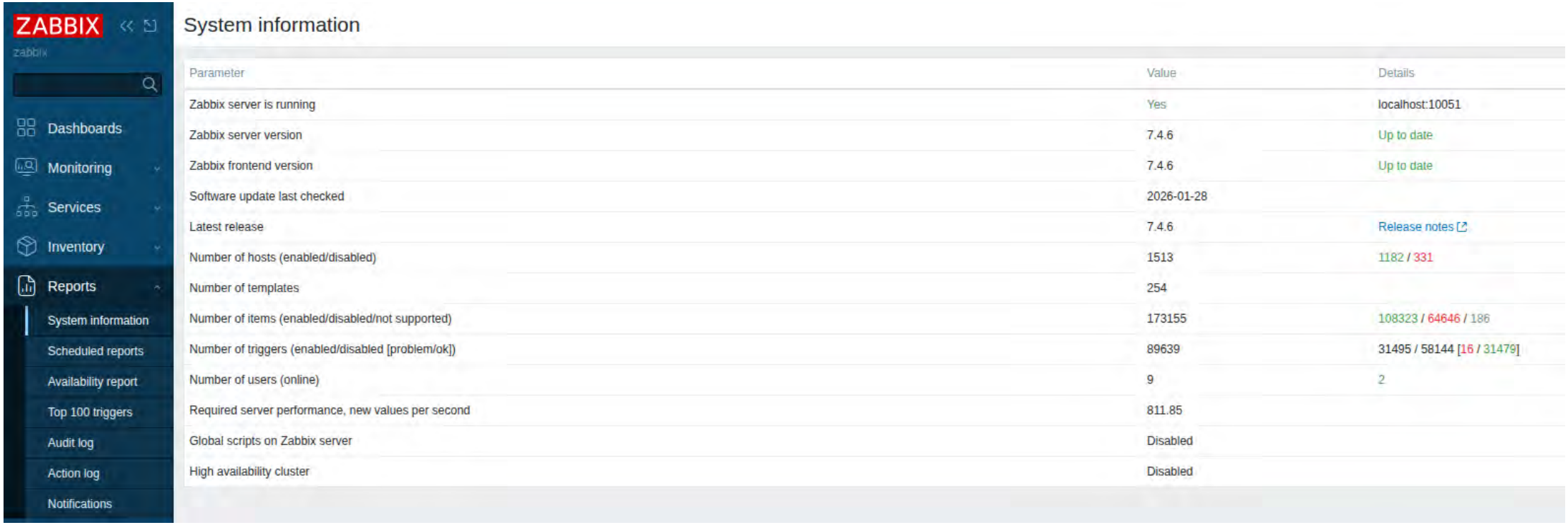


What is Zabbix?

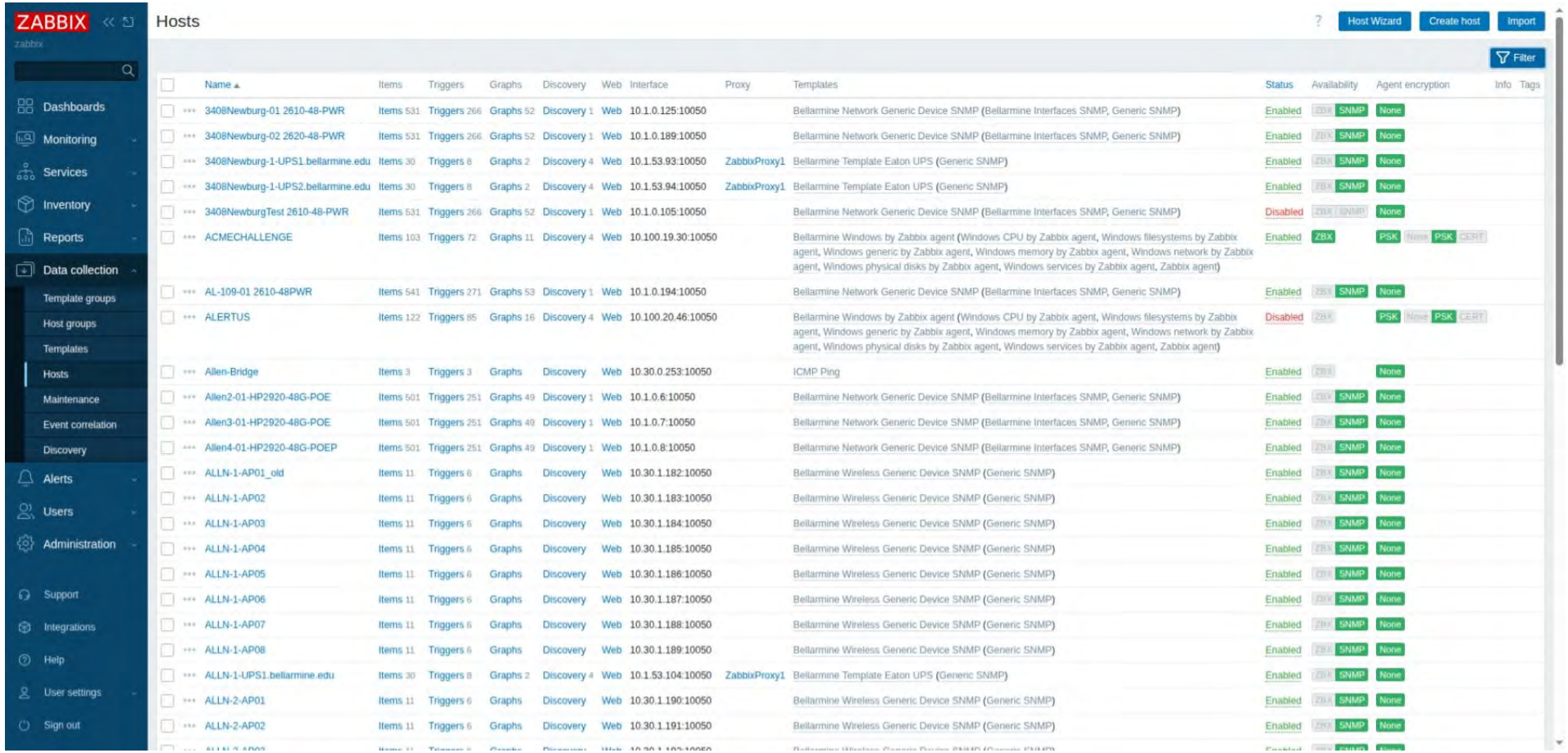
- Monitoring and Alerting
- What can you monitor?
  - Network stuff
  - Server stuff
  - DB stuff
  - Cloud stuff
  - VM stuff
  - Application stuff

Zabbix Problems Monitoring

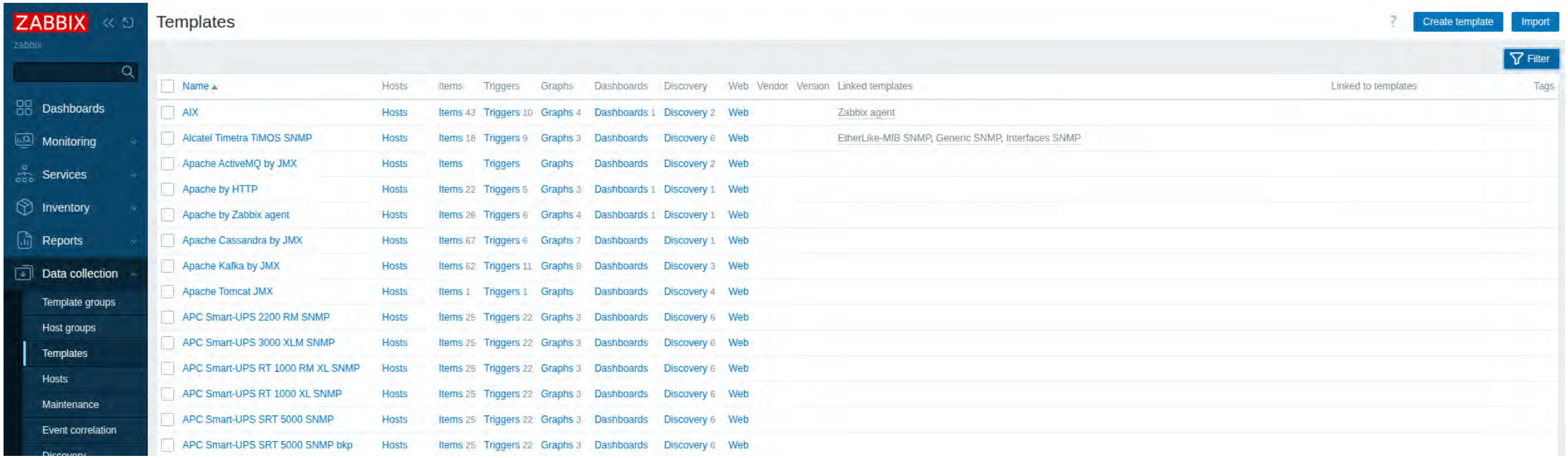
Zabbix System Information



Zabbix Hosts Lists

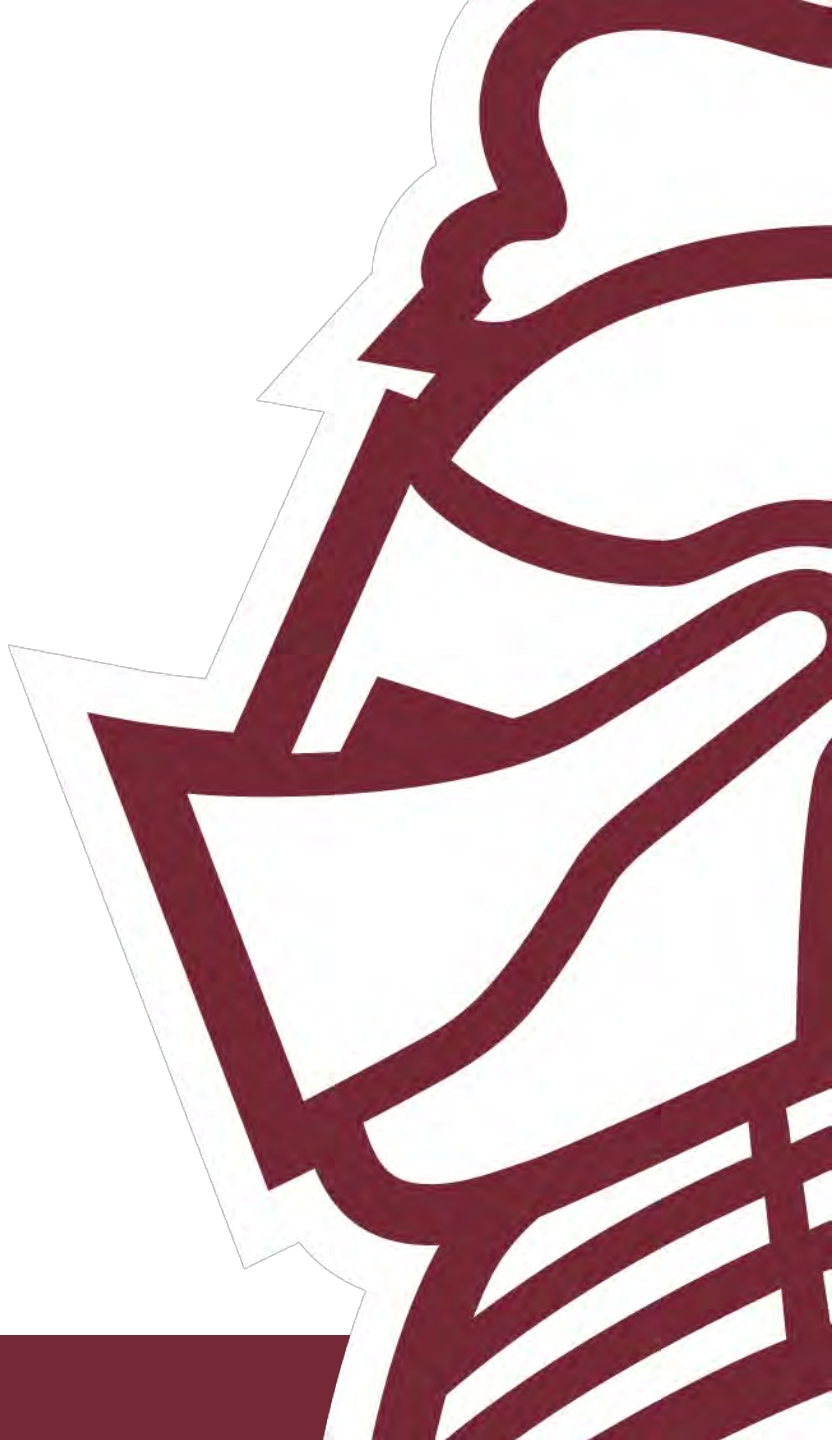


Templates (https://www.zabbix.com/integrations)



Logging with Elastic Stack

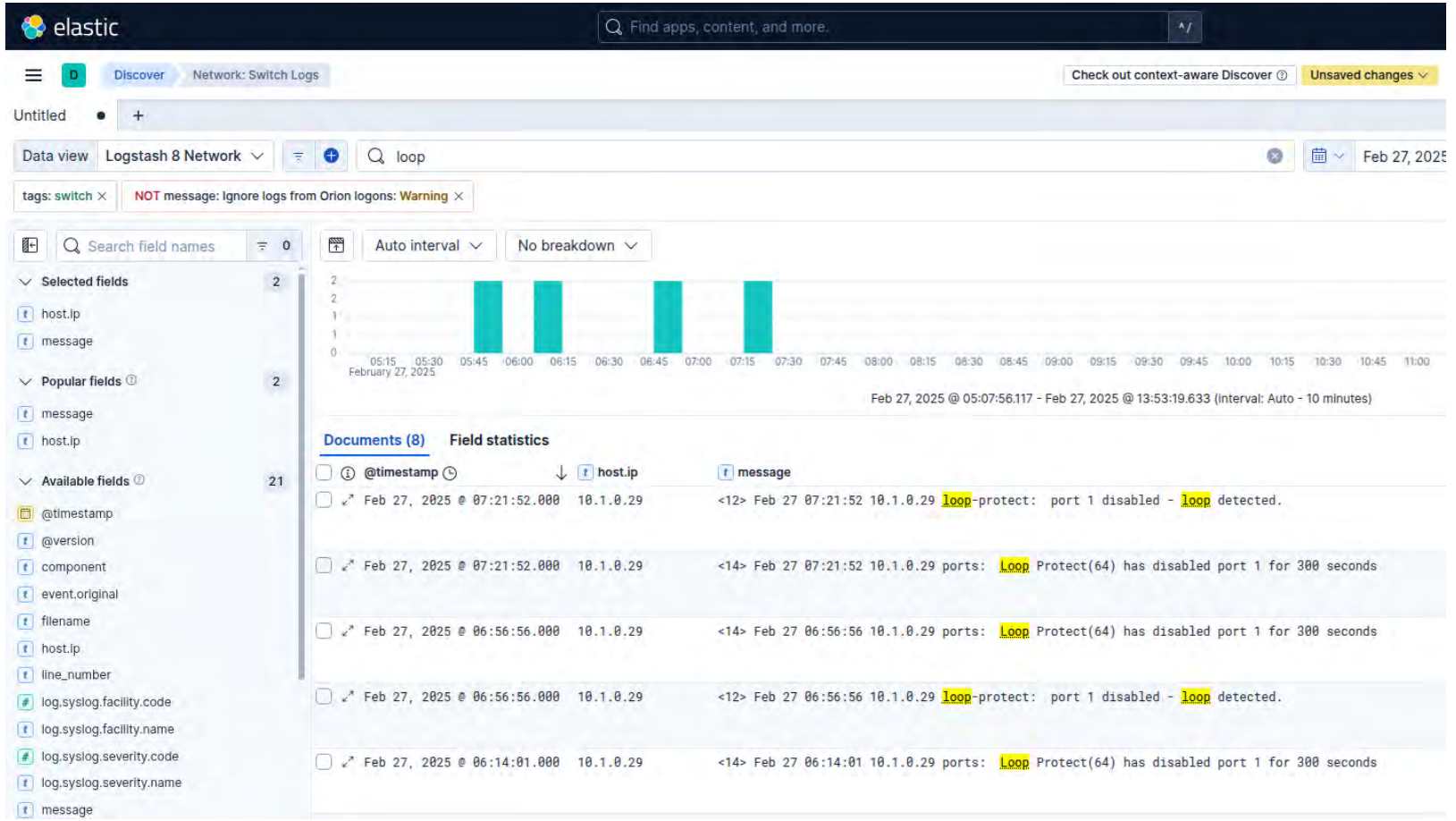
https://www.elastic.co



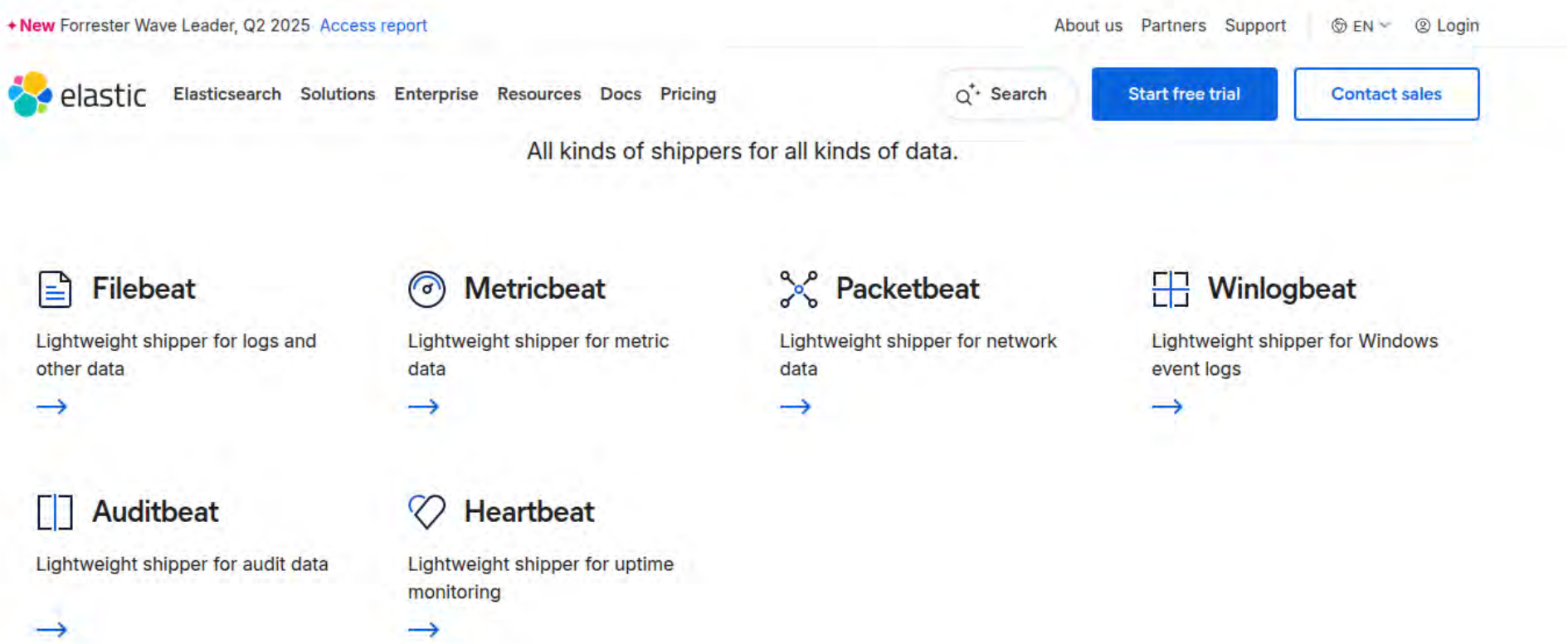
What is Elastic Stack

- Centralized logging system for EVERYTHING
  - Syslog
  - File based logs
  - API based monitoring
  - Windows Event Logs
  - Audit monitoring
  - Metrics monitoring
- Data analytics and visualizations
- Act as a SIEM

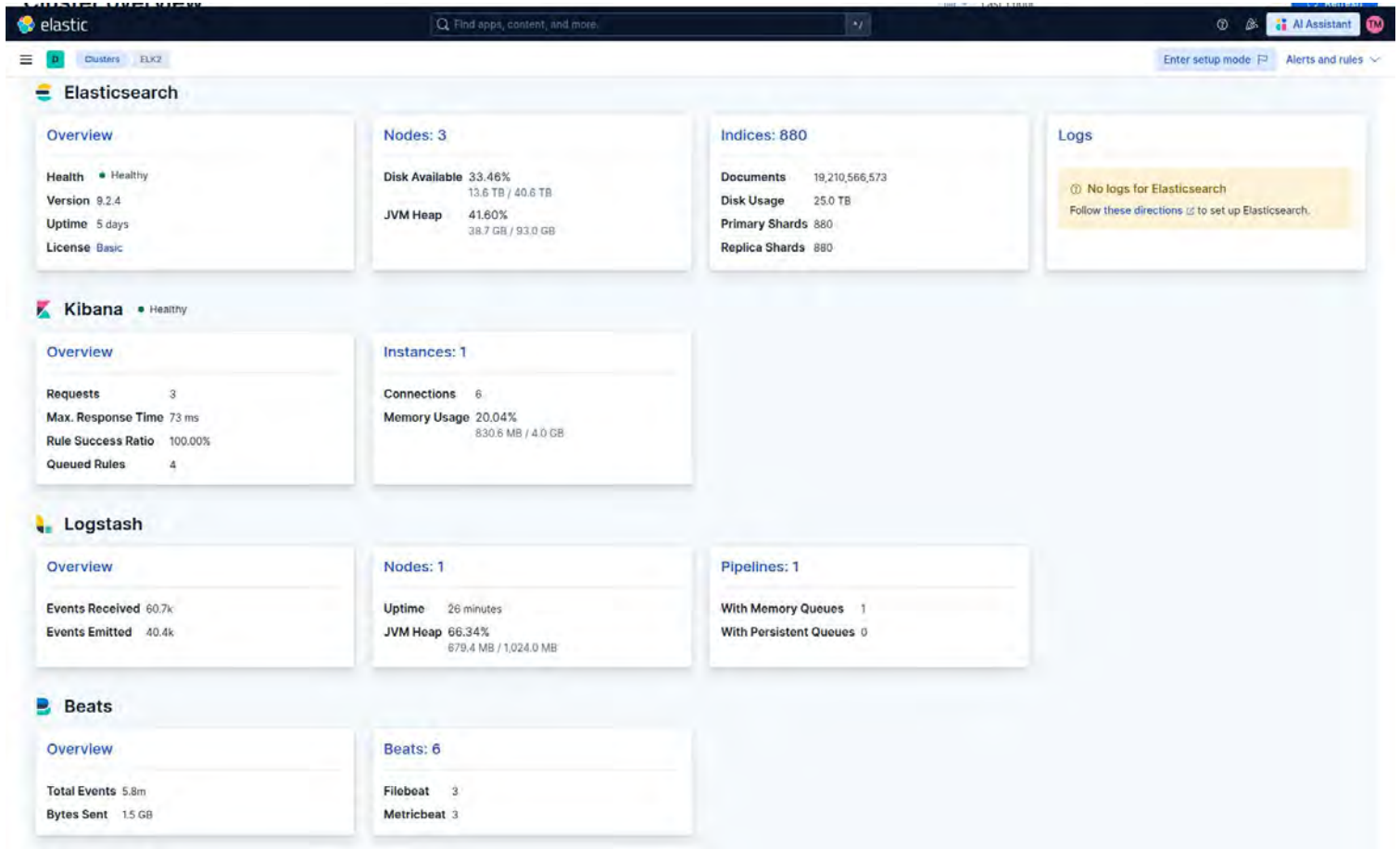
Elastic Discovery Search



Elastic's Beats Data Shippers (https://www.elastic.co/beats)



Elastic Cluster Stats



Other Tools

- NetDisco: https://netdisco.org/
  - Scan your network and find where and how devices are connected
- RANCID/Oxidized: https://shrubbery.net/rancid/ https://github.com/ytti/oxidized
  - Backup your network hardware configurations
- LibreNMS: https://www.librenms.org/
  - Network monitoring system
- Nautobot: https://docs.nautobot.com/projects/core/en/stable/
  - Fork of Netbox that adds Ansible automation
- Uyuni: https://www.uyuni-project.org/
  - OS/package/patch/config management for Linux systems
- OpenSearch: https://opensearch.org/
  - Amazon's fork of Elastic (*it's complicated)