# From Bare Metal to Abstraction

A There and Back Again Tale to the Heart of Cloud-Native Computing.

# Jeremy Meiss

**Director, DevEx & DevRel**

*OneStream Software*

**DevOpsDays KC Organizer**

A long time ago, in a data center far, far away…

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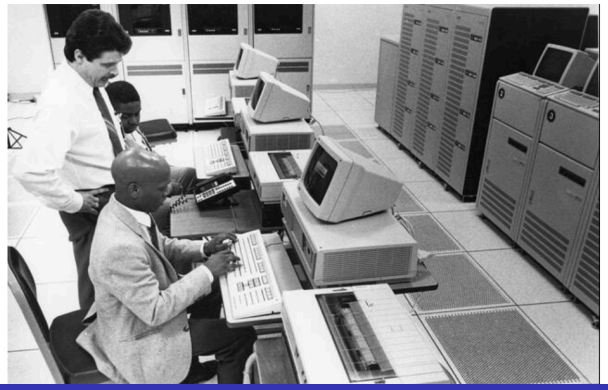



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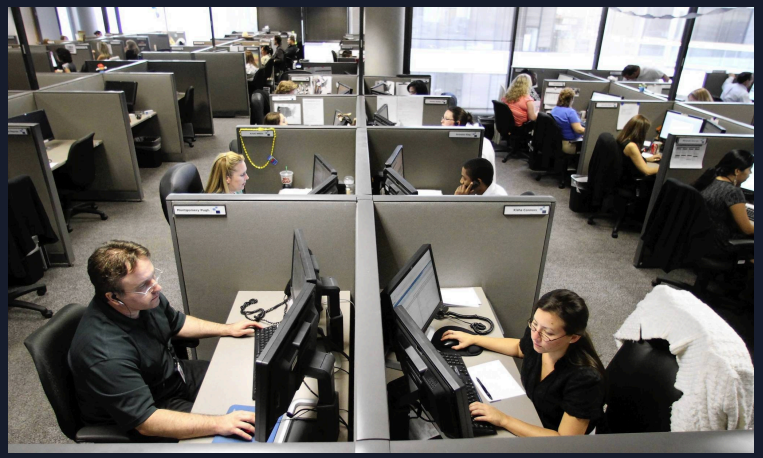
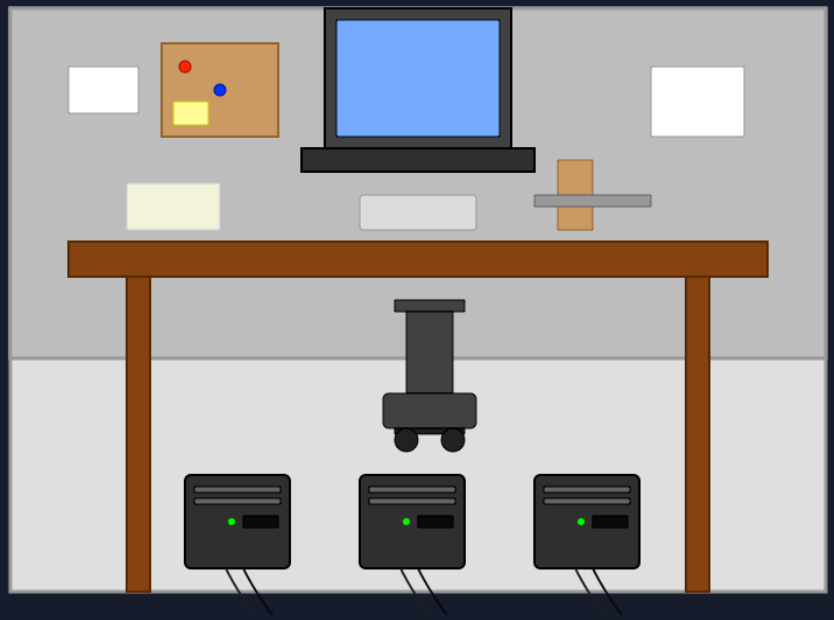
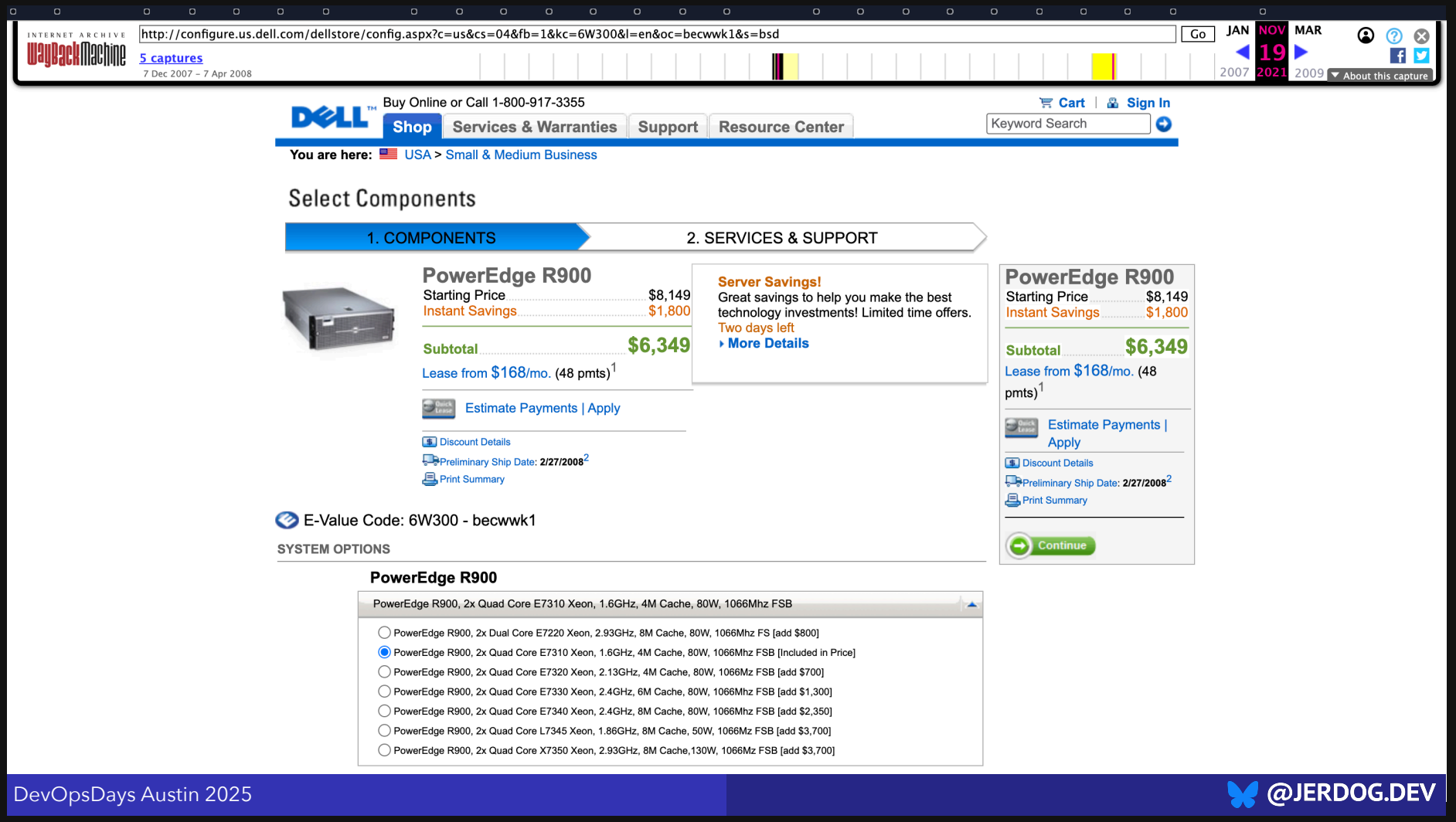
CONSOLE


Cisco 7000

# BGP, the "Two Napkin Protocol"






INTERNET ARCHIVE
WayBackMachine
http://configure.us.dell.com/dellstore/config.aspx?c=us&cs=04&fb=1&kc=6W300&l=en&oc=becwwk1&s=bsd
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Subtotal $6,349
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Preliminary Ship Date: 2/27/2008[2]
Print Summary
Server Savings!
Great savings to help you make the best technology investments! Limited time offers.
Two days left
More Details
PowerEdge R900
Starting Price $8,149
Instant Savings $1,800
Subtotal $6,349
Lease from $168/mo. (48 pmts)[1]
Estimate Payments | Apply
Discount Details
Preliminary Ship Date: 2/27/2008[2]
Print Summary
Continue
E-Value Code: 6W300 - becwwk1
SYSTEM OPTIONS
PowerEdge R900
PowerEdge R900, 2x Quad Core E7310 Xeon, 1.6GHz, 4M Cache, 80W, 1066Mhz FSB
PowerEdge R900, 2x Dual Core E7220 Xeon, 2.93GHz, 8M Cache, 80W, 1066Mhz FS [add $800]
PowerEdge R900, 2x Quad Core E7310 Xeon, 1.6GHz, 4M Cache, 80W, 1066Mhz FSB [Included in Price]
PowerEdge R900, 2x Quad Core E7320 Xeon, 2.13GHz, 4M Cache, 80W, 1066Mz FSB [add $700]
PowerEdge R900, 2x Quad Core E7330 Xeon, 2.4GHz, 6M Cache, 80W, 1066Mhz FSB [add $1,300]
PowerEdge R900, 2x Quad Core E7340 Xeon, 2.4GHz, 8M Cache, 80W, 1066Mhz FSB [add $2,350]
PowerEdge R900, 2x Quad Core L7345 Xeon, 1.86GHz, 8M Cache, 50W, 1066Mz FSB [add $3,700]
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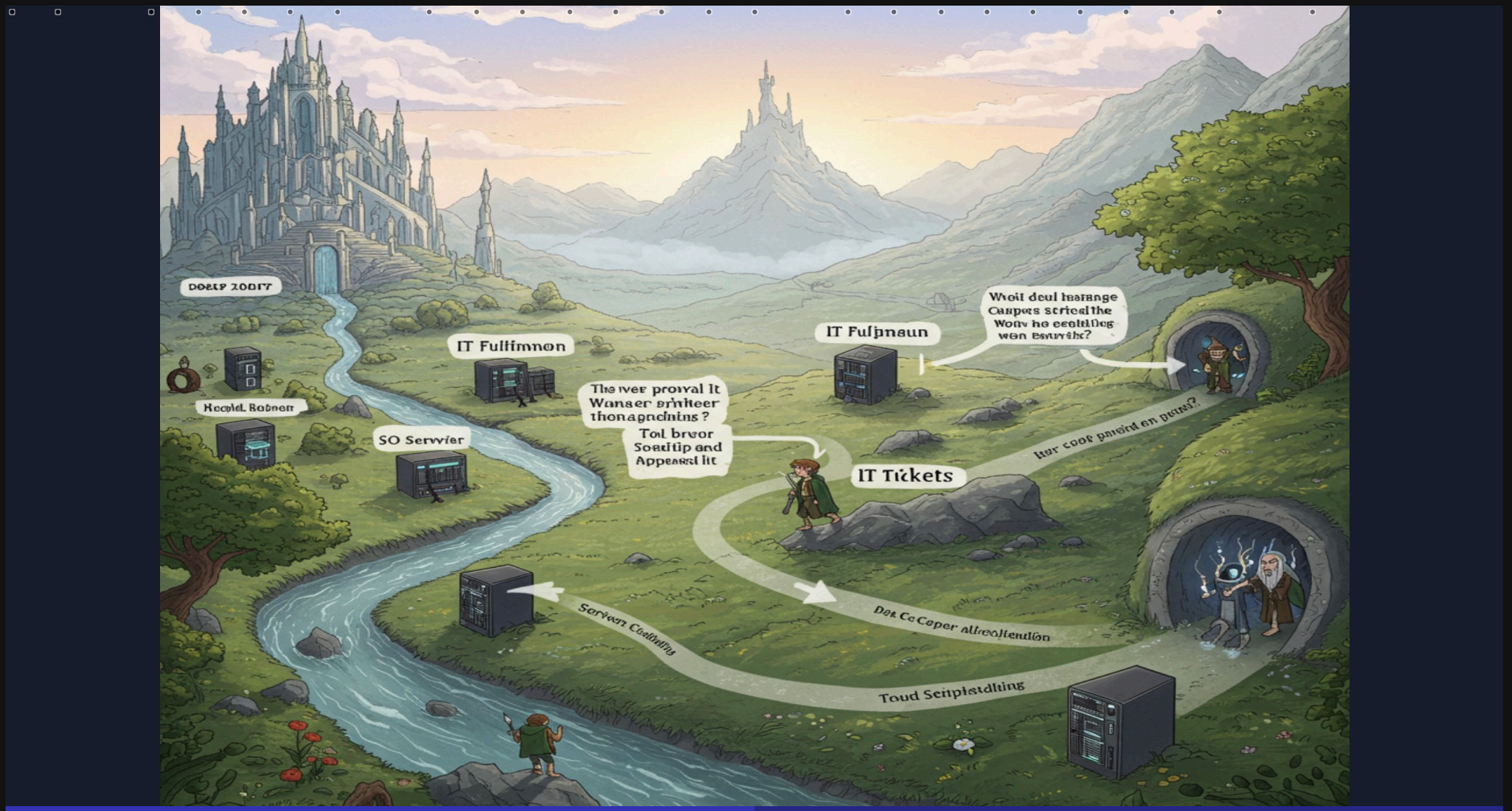
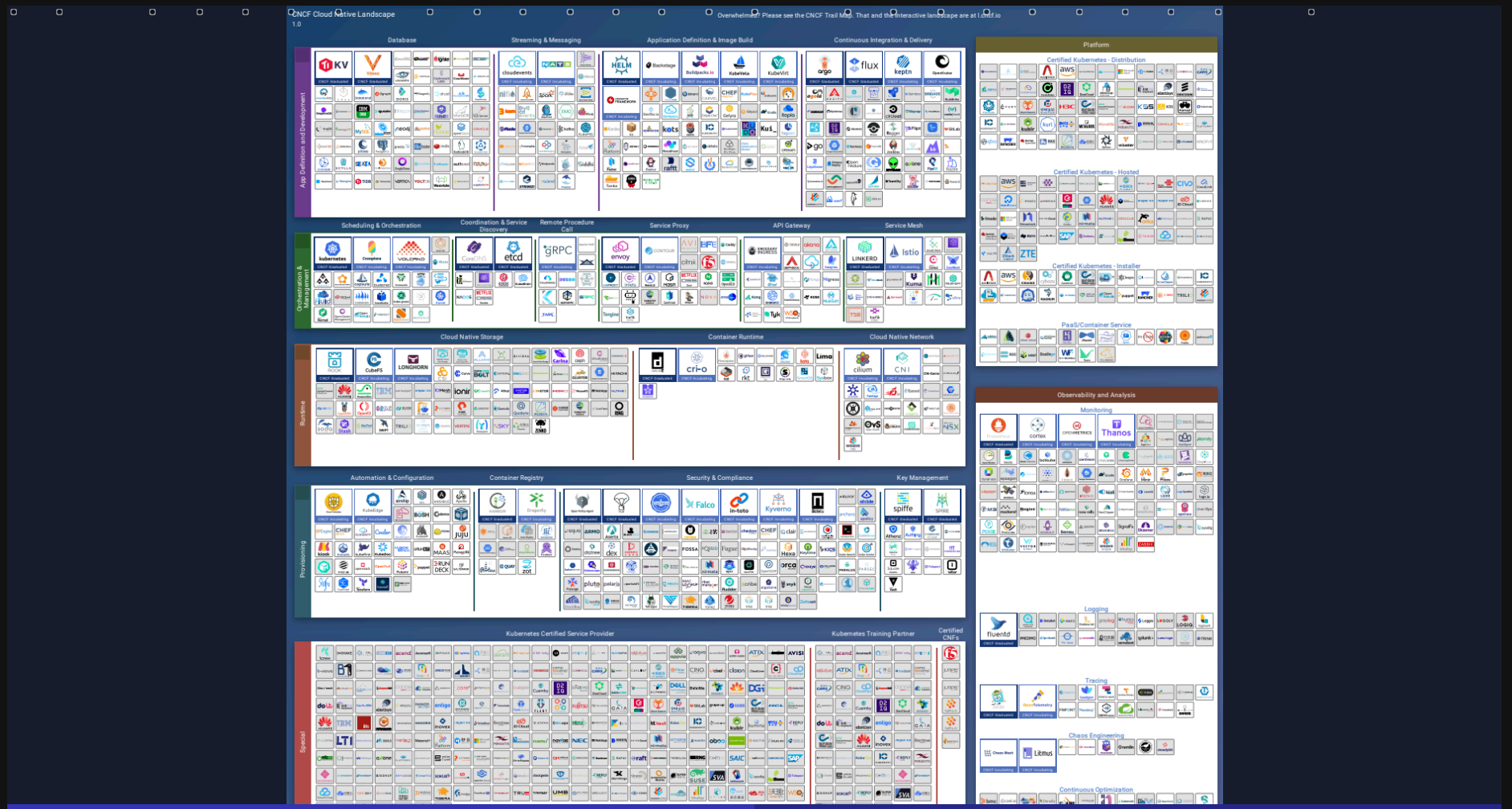

IT Tickets

# The Dark Ages of IT

/r/sysadmin horror stories are fun, if not a bit triggering

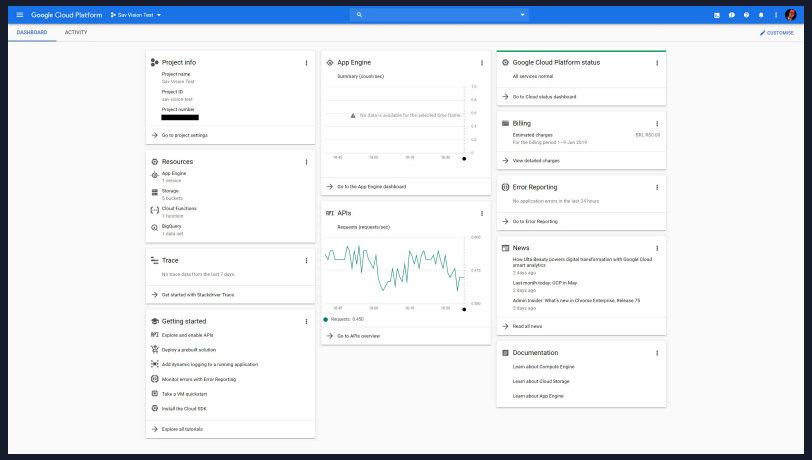
BOFH. 'nuf said.

- No online documentation
- Power switch kicked off meant a 30-minute drive to the data center
- Data recovery bandwidth as fast as a car loaded with tapes could drive
- Didn’t update things until something was broke
- Large binders of CDs for every OS and program in the company
- Hotswap was a myth (and no one really used SCSI back then 🤣 )
- Sneakernet filesharing


CNCF Cloud Native Landscape
1.0
Overwhelmed? Please see the CNCF Trail Map. That and the interactive landscape are at l.cncf.io
App Definition and Development
Database
Streaming & Messaging
Application Definition & Image Build
Continuous Integration & Delivery
Orchestration & Management
Scheduling & Orchestration
Coordination & Service Discovery
Remote Procedure Call
Service Proxy
API Gateway
Service Mesh
Runtime
Cloud Native Storage
Container Runtime
Cloud Native Network
Provisioning
Automation & Configuration
Container Registry
Security & Compliance
Key Management
Special
Kubernetes Certified Service Provider
Kubernetes Training Partner
Certified CNFs
Platform
Certified Kubernetes - Distribution
Certified Kubernetes - Hosted
Certified Kubernetes - Installer
PaaS/Container Service
Observability and Analysis
Monitoring
Logging
Tracing
Chaos Engineering
Continuous Optimization

> "We are stuck with technology when what we really want is just stuff that works."

-Douglas Adams


Google Cloud Platform
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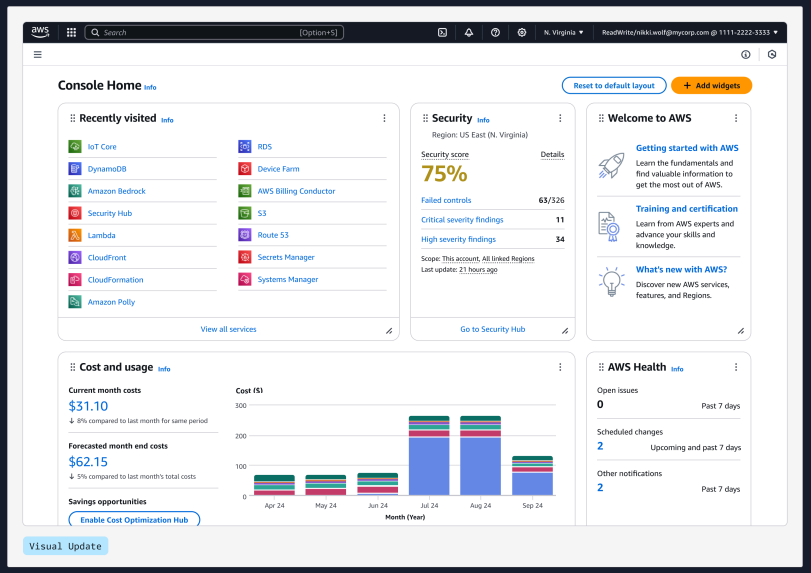
ACTIVITY
Project info
App Engine
Google Cloud Platform status
Resources
Billing
Error Reporting
APIs
Trace
News
Getting started
Documentation


Console Home Info
Reset to default layout
Add widgets
Recently visited Info
IoT Core
DynamoDB
Amazon Bedrock
Security Hub
Lambda
CloudFront
CloudFormation
Amazon Polly
RDS
Device Farm
AWS Billing Conductor
S3
Route 53
Secrets Manager
Systems Manager
View all services
Security Info
Region: US East (N. Virginia)
Security score
75%
Details
Failed controls 63/326
Critical severity findings 11
High severity findings 34
Go to Security Hub
Welcome to AWS
Getting started with AWS
Learn the fundamentals and find valuable information to get the most out of AWS.
Training and certification
Learn from AWS experts and advance your skills and knowledge.
What's new with AWS?
Discover new AWS services, features, and Regions.
Cost and usage Info
Current month costs
$31.10
Forecasted month end costs
$62.15
Savings opportunities
Enable Cost Optimization Hub
Cost ($)
Apr 24
May 24
Jun 24
Jul 24
Aug 24
Sep 24
Month (Year)
AWS Health Info
Open issues
0
Past 7 days
Scheduled changes
2
Upcoming and past 7 days
Other notifications
2
Past 7 days
Visual Update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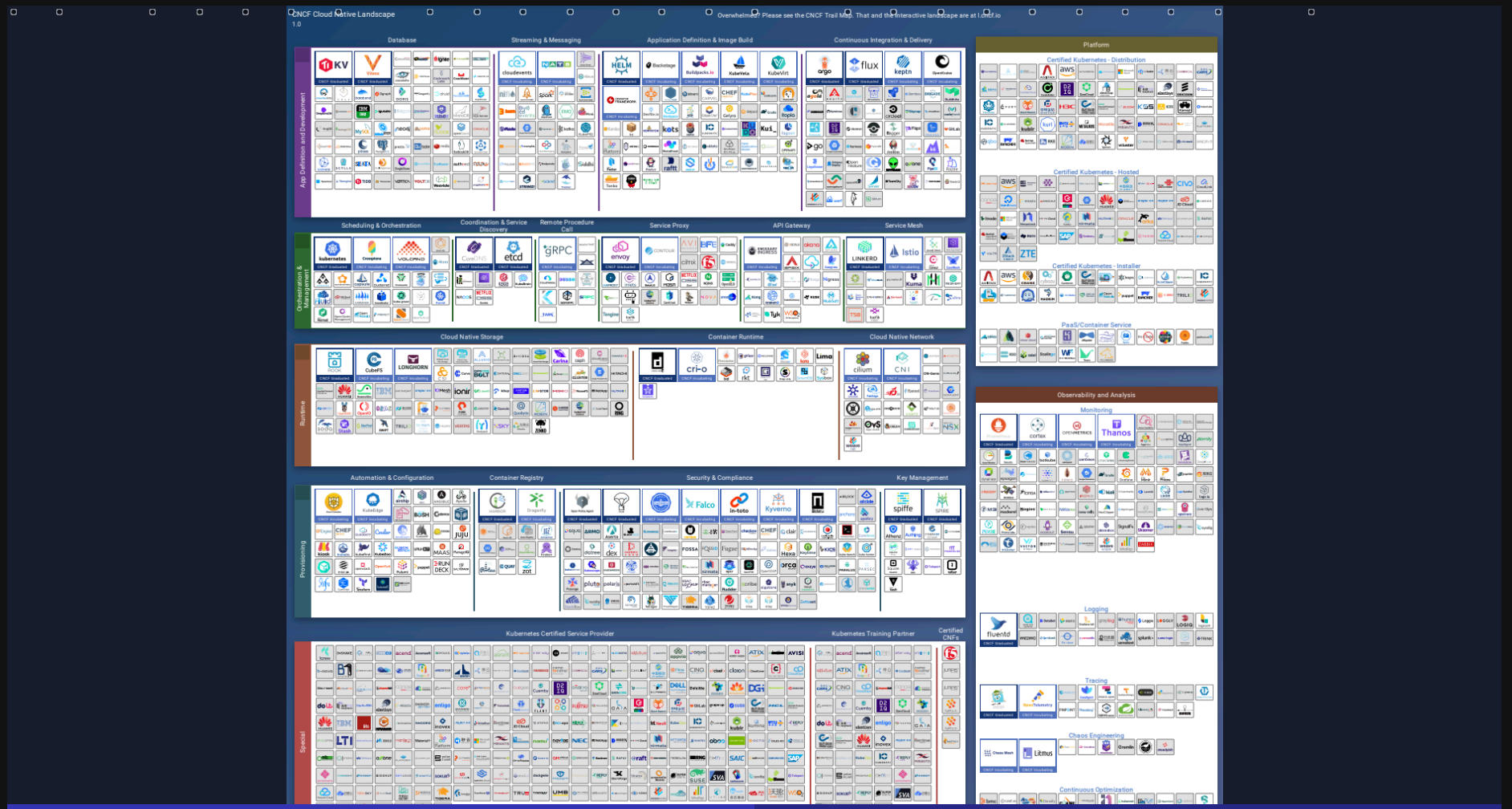
# Journey from Bare Metal to Cloud Native

- Limitations inherent in managing physical servers
- Adoption of virtualization to improve resource utilization
- Cloud computing brought on-demand compute resources (a virtual Rent-a-Center)
- DevOps movement pushed collaboration and automation, breaking down silos
- Docker & containerization provided a standardized way to package applications
- Orchestration platforms like Kubernetes emerged to manage containers at scale
- …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Runtime
Cloud Native Storage
Container Runtime
Cloud Native Network
Provisioning
Automation & Configuration
Container Registry
Security & Compliance
Key Management
Special
Kubernetes Certified Service Provider
Kubernetes Training Partner
Certified CNFs
Platform
Certified Kubernetes - Distribution
Certified Kubernetes - Hosted
Certified Kubernetes - Installer
PaaS/Container Service
Observability and Analysis
Monitoring
Logging
Tracing
Chaos Engineering
Continuous Optimization

# Core Foundational Elements Automation

## Past


## Present

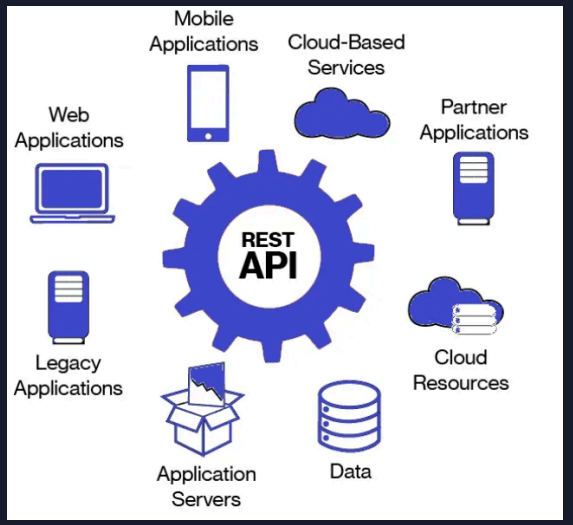
```
provider "aws" {
  alias  = "us_east_1"
  region = "us-east-1"
}

module "my_site" {
  source = "git::ssh://git@github.com/......"

  site_domain = "hello.example.com"
}

resource "aws_s3_bucket_object" "my_index" {
  bucket       = "${module.my_site.bucket_name}"
  key          = "index.html"
  content      = "<pre>Hello World!</pre>"
  content_type = "text/html; charset=utf-8"
}
```

# Core Foundational Elements

Standardization

Past


Present

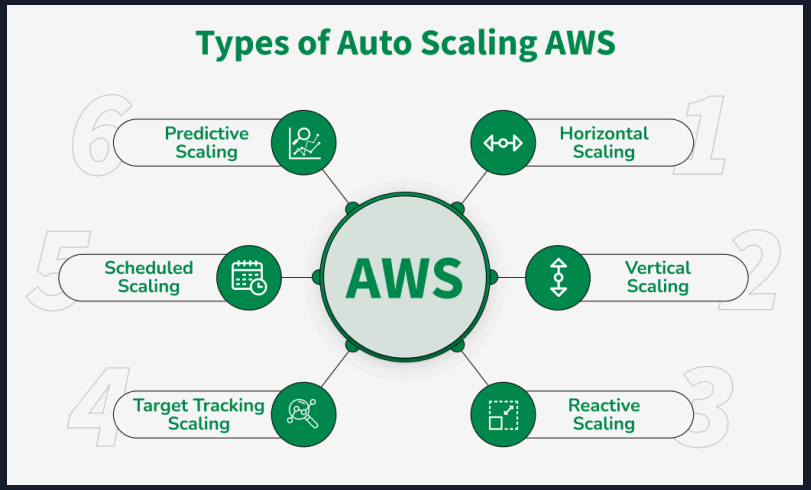


# Core Foundational Elements

Scalability

Past

Present

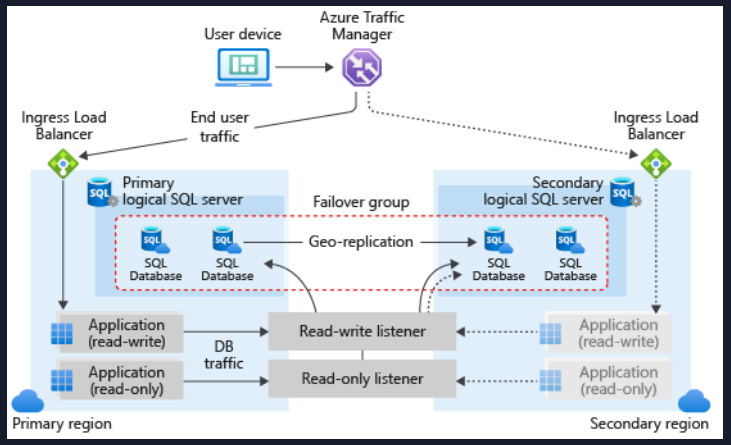


# Core Foundational Elements

Resilience

Past

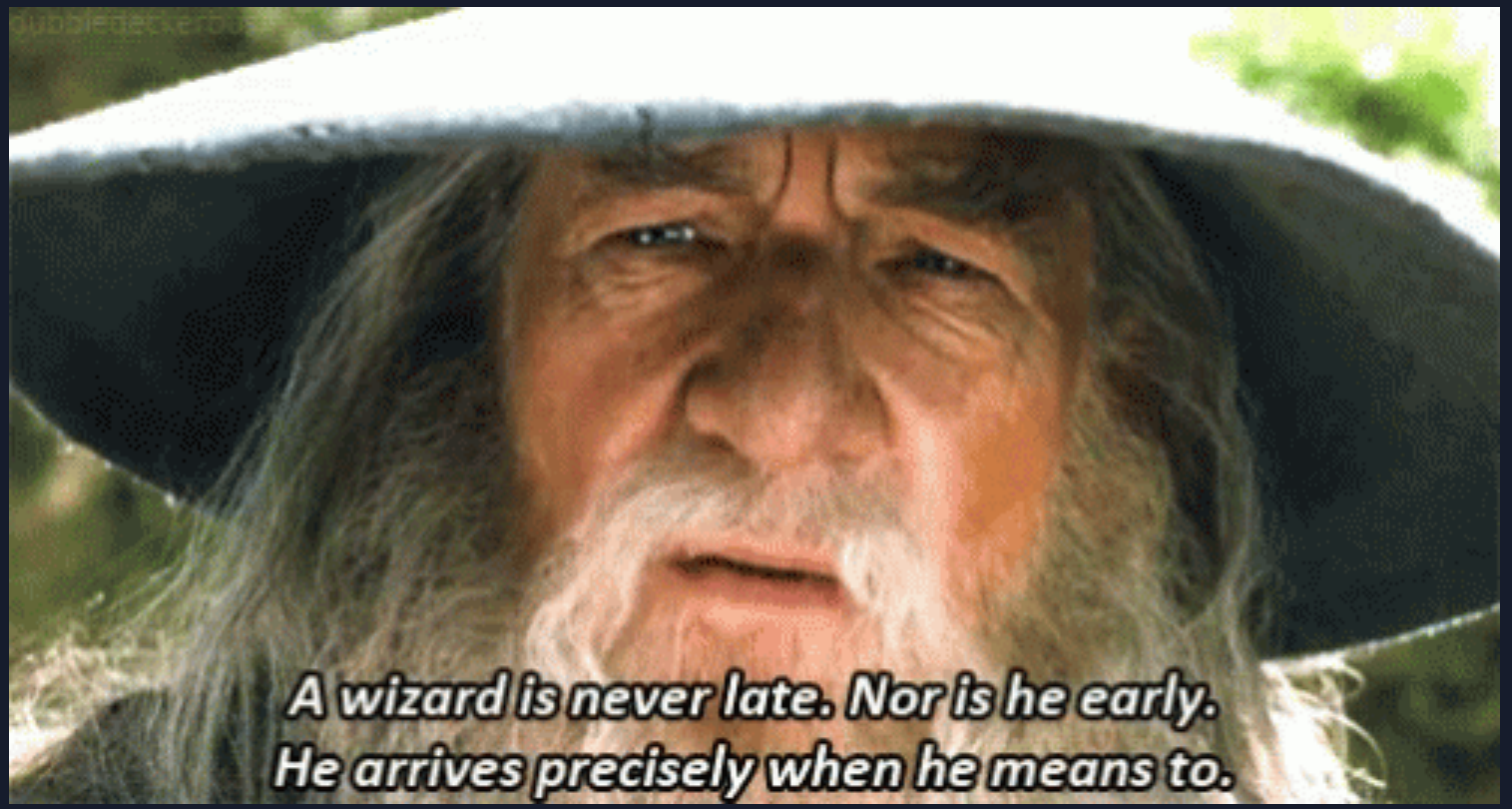
Present



# Core Foundational Elements Security

Past

Present


A wizard is never late. Nor is he early.
He arrives precisely when he means to.

# Future Challenges

- Practitioner Experience + AI-Driven Operations
- Expanding Cloud Boundaries
- Sustainability and Efficiency Focus
- Continued Open Ecosystem Growth

> "I learned to always take on things I'd never done before. Growth and comfort do not coexist."

-Ginni Rometty, former IBM CEO

Thank you!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jmeiss.me


~~@IAmJerdog~~

END