

# WordPress & AWS

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# Topics

- Cloud overview
- AWS overview
- Getting Started
- Intermediate services
- Advanced services
- Learning more
- Questions

# Not Covering

- Services/features not applicable to WP
- Detailed pricing info
- Compliance
  - FERPA
  - FISMA
  - HIPAA
  - PCI
  - SAS 70 / SSAE 16
  - SOX

# About Me

- Consultant at [Versivo](#)
- Web DevOps for [Arlington County, VA](#)
- WP since 2010
- AWS since 2012
- Disclosures
  - Own 10 shares of AMZN
  - Occasionally receive service credits at events



Certified

Solutions Architect - Associate

SysOps Administrator - Associate

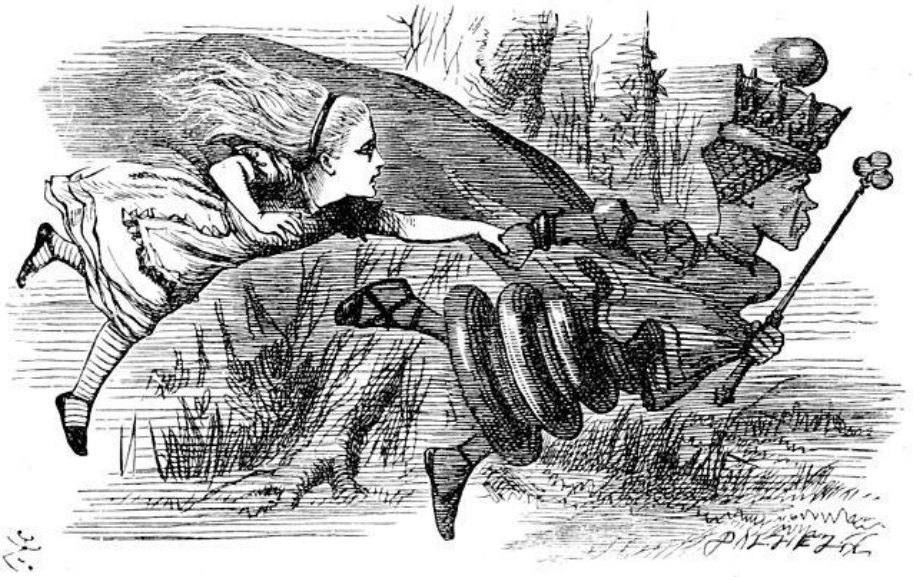
# Cloud Computing Is (NIST)

- Essential characteristics
  - On-demand self-service
  - Broad network access
  - Resource pooling
  - Rapid elasticity
  - Measured service
- Service Models ( \_ as a Service)
  - Software (SaaS) – Basecamp, WP.com
  - Platform (PaaS) – Heroku, GAE
  - Infrastructure (IaaS) – AWS, Azure, GCE, HP Cloud

# Cloud Computing Isn't

- Magic
- Cheaper (necessarily)
- Always the right choice

*"Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"*



# Amazon Web Services (AWS)

- Yes, that Amazon
- Well-known users: Netflix, Dropbox, reddit, Obama 2012, NASA
- CTO Werner Vogels:  
*“The excess capacity story is a myth. It was never a matter of selling excess capacity, actually within 2 months after launch AWS would have already burned through the excess Amazon.com capacity. Amazon Web Services was always considered a business by itself, with the expectation that it could even grow as big as the Amazon.com retail operation.”*

# Gartner Cloud IaaS MQ

*“more than five times the cloud IaaS compute capacity in use than the aggregate total of the other 14 providers in this Magic Quadrant”*



Source: Gartner (May 2014)

As of May 2014



# Facilities

- **Regions**
  - Completely independent from each other
  - Data doesn't leave unless you want it to
  - Some services limited to certain regions
- **Availability Zones (AZ)**
  - 2+ zones per region
  - Low-latency links within region
  - Independent power and Internet links
- **Edge Locations - DNS and CDN only**

# USA

- Regions (yellow)
  - us-east-1 (Northern VA)
  - us-west-1 (Northern CA)
  - us-west-2 (Oregon)
  - GovCloud (“West Coast”)
- Edge locations (blue)



# Worldwide Presence



# Pricing

- CapEx → OpEx
- Dominated by compute, storage, and BW
- Bad news:
  - It's complicated
  - Expensive compared to “unlimited” hosting
- Good news:
  - Tiered pricing
  - Reservations
  - Goes down over time
- See [Simple Monthly Calculator](#)

# Getting Started

Supplementing existing sites

# Creating an Account

- [Existing Amazon.com account or AWS-specific](#)
- [Free tier](#) for 12 months (still need CC)
- Security
  - [Multi-Factor Authentication](#) (MFA)
    - Hardware fob or card
    - TOTP app (e.g. Google Authenticator)
  - [Identity and Access Management](#) (IAM)
    - Users (who)
    - Policies (what)

# Route 53

- Domain registrations (Gandi.net reseller)
- Worldwide anycast DNS
  - [Routing policies](#)
    - Simple
    - Weighted
    - Latency (nearest AWS region)
    - Failover (active/passive with health check)
    - Geolocation
  - ALIAS records (pseudo-CNAME for zone apex)

# Simple Storage Service (S3)

- Bucket: regional key-value store
- Objects 1 byte to 5 TB
- 99.999999999% durability and 99.99% availability
- Versioning
- Access control and encryption
- Automatic HTTP(S) and BitTorrent
- s3.amazonaws.com subdomain or CNAME
- Can host static sites



# Signed URLs - Gravity Forms

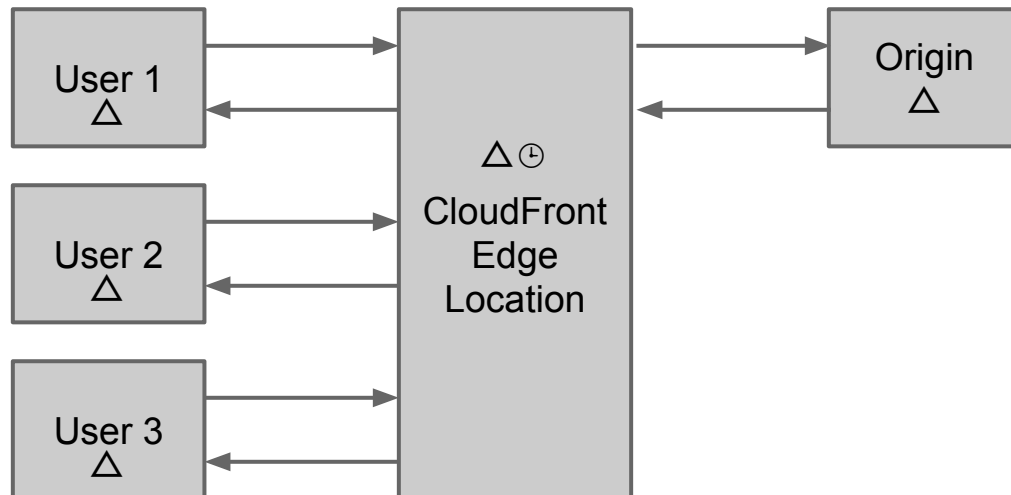
- Object + method + expiration
- Signed (HMAC) with your access key
- [http://s3.amazonaws.com/gravityforms/releases/gravityforms\\_1.8.17.9.zip?AWSAccessKeyId=1603BBK66770VCSCJSG2&Expires=1413635432&Signature=pGvFS7sa5hPu28bKadbcidMSiQY%3D](http://s3.amazonaws.com/gravityforms/releases/gravityforms_1.8.17.9.zip?AWSAccessKeyId=1603BBK66770VCSCJSG2&Expires=1413635432&Signature=pGvFS7sa5hPu28bKadbcidMSiQY%3D)

# CloudFront

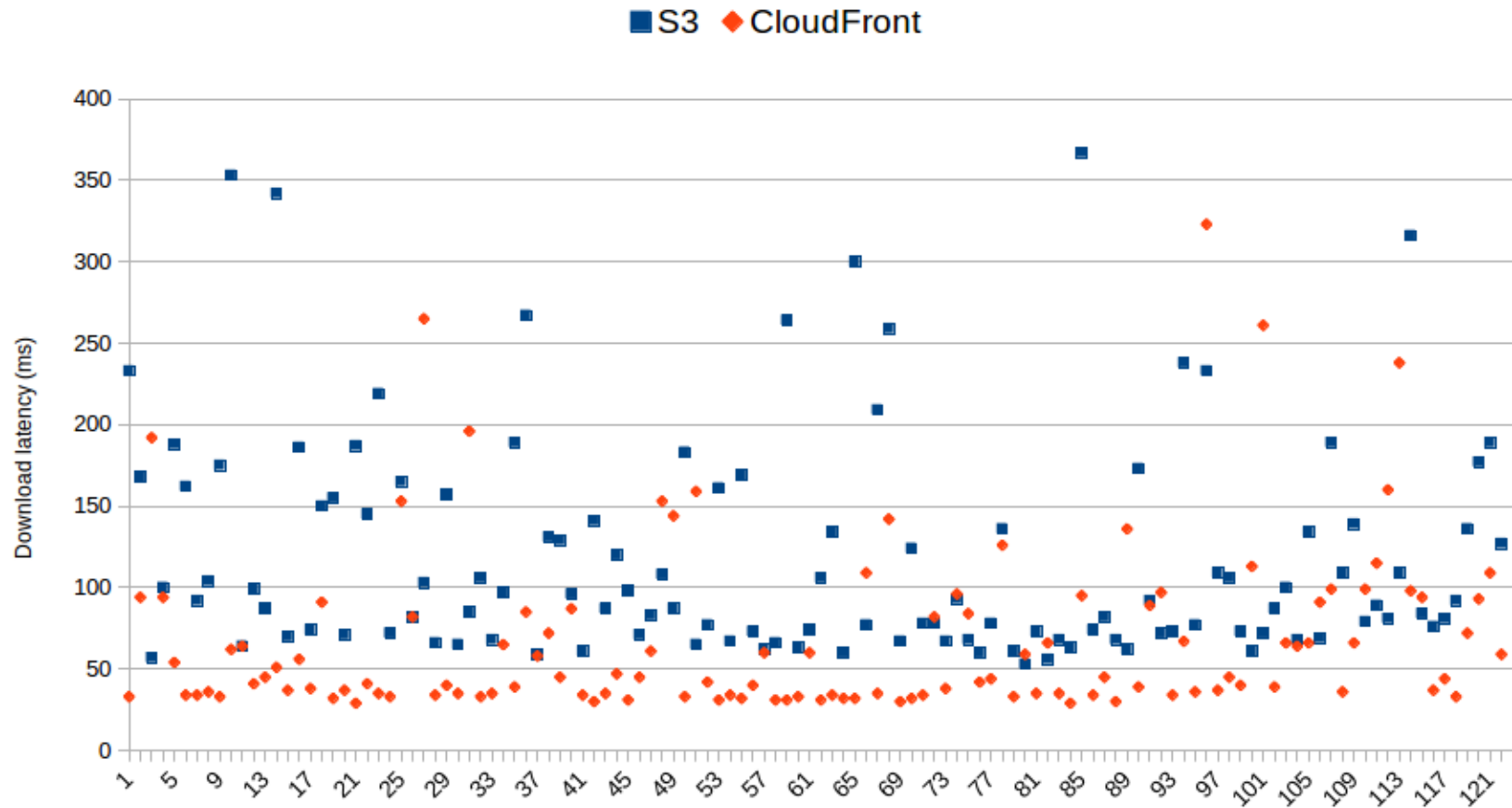
- Content Delivery Network (CDN) / proxy
- Worldwide edge locations
- Static, dynamic, and streaming content
  - S3 or your servers as origin
  - Origin routing by URL pattern
  - Signed URLs like S3
- cloudfront.net subdomain or CNAME
- SNI SSL free, dedicated IP \$600/mo
- GeoIP restrictions
- Note: invalidations not instant, can cost

# Edge Caching

DNS routes request to nearest edge location  
First request to each edge causes origin fetch  
Subsequent requests to same edge served from CloudFront cache (until expiration)



# Latency Comparison



# Glacier

- Cheap archival storage
- Assumes data rarely/never accessed
- Retrieval
  - Complicated pricing
  - Asynchronous (~4 hours)
- Lifecycle transitions from S3 buckets

# Storage Tools

- AWS Console
- [CloudBerry Explorer](#)
- [W3 Total Cache](#)
- [SDKs, IDE plugins, and CLI tools](#)

# Simple Email Service (SES)

- Outbound-only email
- Interaction
  - Console
  - SMTP (via plugin like [Easy WP SMTP](#))
  - SDK
  - HTTPS GET/POST
- Good IP reputation (RBL)
- Delivery metrics
- Feedback loops with major ISPs
- DKIM

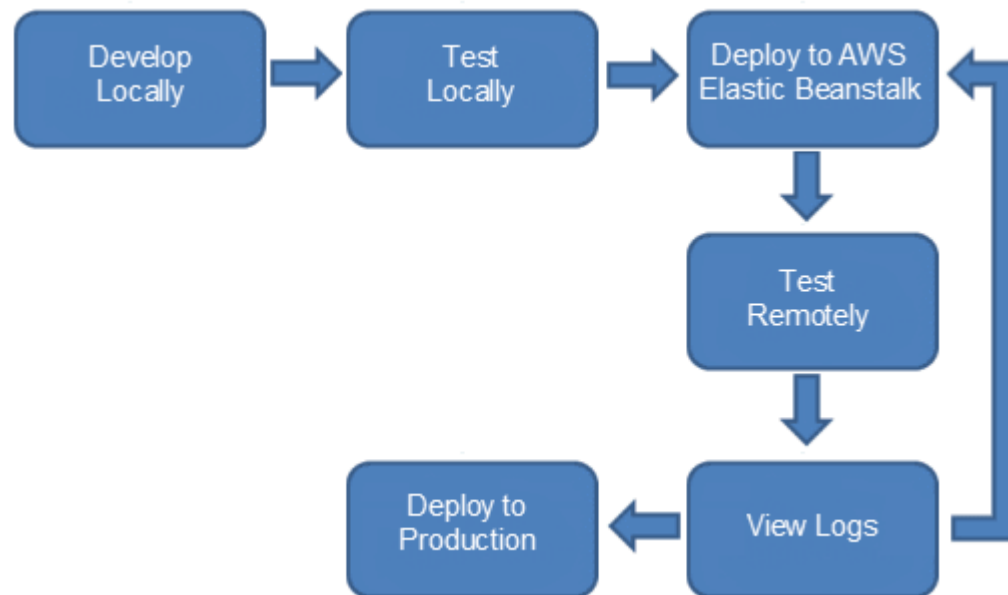
# Intermediate Use Cases

Going all-in



# Elastic Beanstalk (Eb)

- PaaS like Heroku or AppFog
- Upload ZIP or Git push
- Full control over resources
- Zero-downtime migrations (CNAME swap)



# Elastic Compute Cloud (EC2)

- Unmanaged VMs by the hour
- 1-32 vCPU / 1-244 GB RAM
- Storage
  - Instance - persists across reboots but not stop/start
  - Elastic Block Storage (EBS) - like a SAN, ≤1 TB
    - Magnetic
    - SSD (baseline IOPS + burst)
    - Provisioned IOPS (SSD RAID)
- Elastic IP addresses
- Auto scaling groups
- Amazon Machine Images (AMI)

# Relational Database Service (RDS)

- MySQL 5.1/5.5/5.6
- 1-32 vCPU / 4-244 GB RAM
- Storage (5 GB - 3 TB)
  - Magnetic
  - SSD (baseline IOPS + burst)
  - Provisioned IOPS (SSD RAID)
- Automated and manual snapshots
- Point-in-time restoration (transaction log)
- Multi-AZ deployments (master-slave)
- Read replicas (asynchronous replication)

# Virtual Private Cloud (VPC)

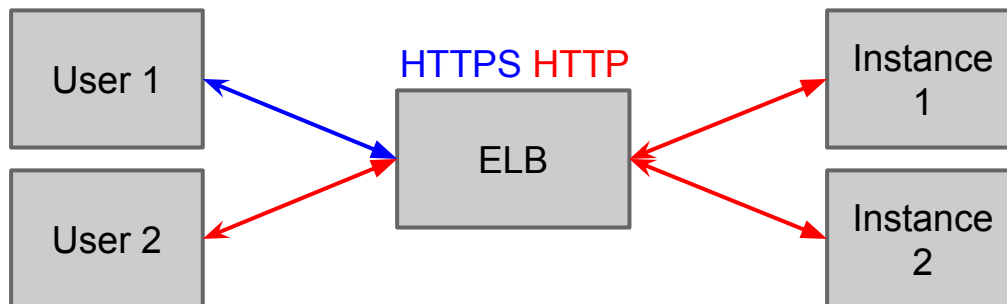
- Plan early!
- Control IP range, subnets, routes, and ACLs
- IPsec VPN or DirectConnect (fiber)

# Advanced Use Cases

Into the deep end

# Elastic Load Balancer (ELB)

- Route traffic across multiple instances/zones
- Health checks
  - Set path, port, and frequency
  - No host header sent
  - Integrates with Route 53 DNS failover
- **SSL**
  - Terminate or pass-through
  - [Mozilla protocol/cipher recommendations](#)



# ElastiCache

- Protocol-compliant with memcached
- 1-32 vCPU / .55-237 GB RAM
- W3TC can use it instead of files
  - Query
  - Object
  - Fragment
  - Page
- PHP session storage - modify php.ini

```
[Session]
session.save_handler = memcached
session.save_path = "example.abcdef.0001.use1.cache.amazonaws.com:11211"
```

# Learning More

- [RTFM](#)
- Blogs
  - [Jeff Bar](#) (AWS)
  - [Harish Ganesan](#) (8K Miles)
- Training
  - [Videos](#)
  - [Self-paced](#)
  - [Instructor-led](#)



**Questions?**