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NASA Eclipses Expectations

Over 40 million people visited into the NASA's website for the six-hour coverage of the spectacular astrological phenomena. There were peaks of over 2 million concurrent viewers of the live video stream, with a total of over 12.1 million unique viewers.

This is 3-4 times more online viewership than Super bowl 2016. The average amount of time spent on the site clocked in between 3-4 minutes - which, for those of you unfamiliar with digital media analytics, is pretty high.

Eclipse Statics



It's one of the biggest internet events in recent history and by far the biggest online event NASA has ever measured. That includes some pretty big events, like landing a car-sized rover on Mars and flying a spacecraft past Pluto.

It is estimated that there were more than 40 million views of the live broadcast on nasa.gov and multiple social platforms. There were nearly 27 million unique views on Facebook before and after the eclipse, and there were 12.1 million unique views on NASA.gov's Eclipse Live page during the event, peaking at between two and three million simultaneous views.

The NASA.gov numbers alone are several times larger than reported streaming numbers for recent Super Bowls, putting the eclipse in the realm of major news, sports and entertainment events. Some of the top viewing areas were outside of the total eclipse areas, suggesting NASA.gov helped people across America share in the excitement.

Several million more viewed on UStream, YouTube, Periscope and Twitch, along with various mobile apps and streaming services, not to mention other outlets that helped share the live broadcast around the country, such as USA Today, WIRED, The Oregonian, WTOP, Chicago Sun Times and others.

Streaming Summary:

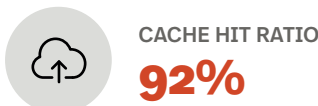
- 12.1 million unique online viewers during the event. It is estimated that it was 3-4 times bigger than online viewership of Super bowl 2016, the Grammys, and bigger than the last day of the Rio Olympics.
- NASA transferred over 2.6 petabytes of data during the event.
- At peak, there were between 2-3 concurrent visitors, resulting in billions of hits on the edge network.

Static Content Delivery Summary:

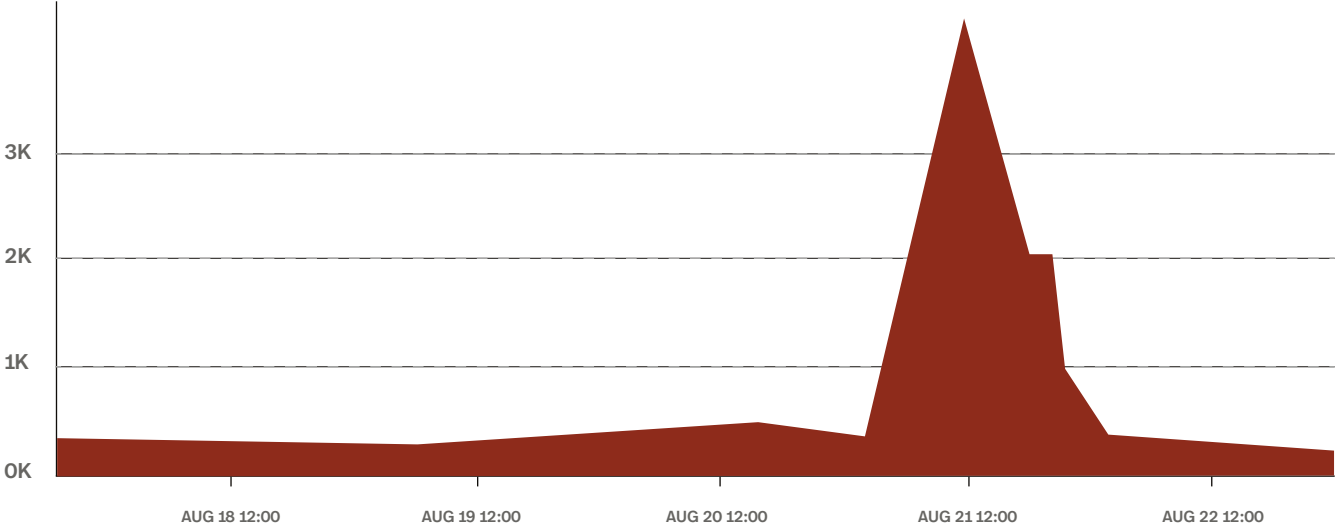
- 60 Terabytes of static content was transferred during the event.
- This was 3-4 times more traffic received by some of the largest retail websites.

Data

Geographic Breakdown



Origin Traffic (Rps)



Users



PEAK ACTIVE SESSIONS
11,682,474



TOTAL SESSIONS
47,880,688



TOTAL VISITORS
35 M

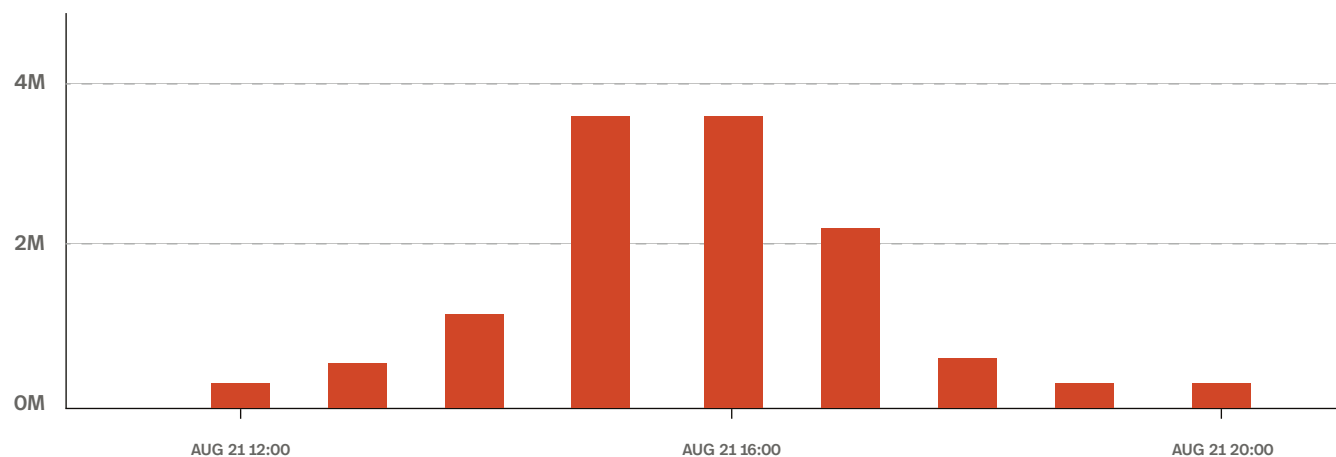


USERS THAT WATCHED ON A MOBILE DEVICE
50%

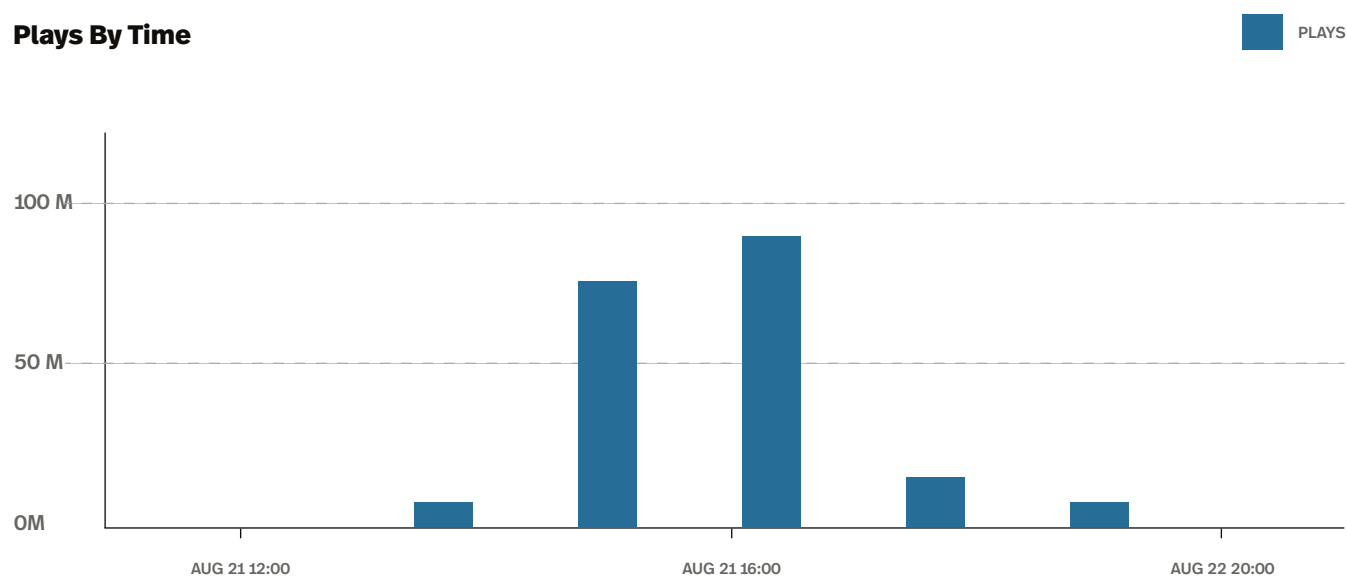


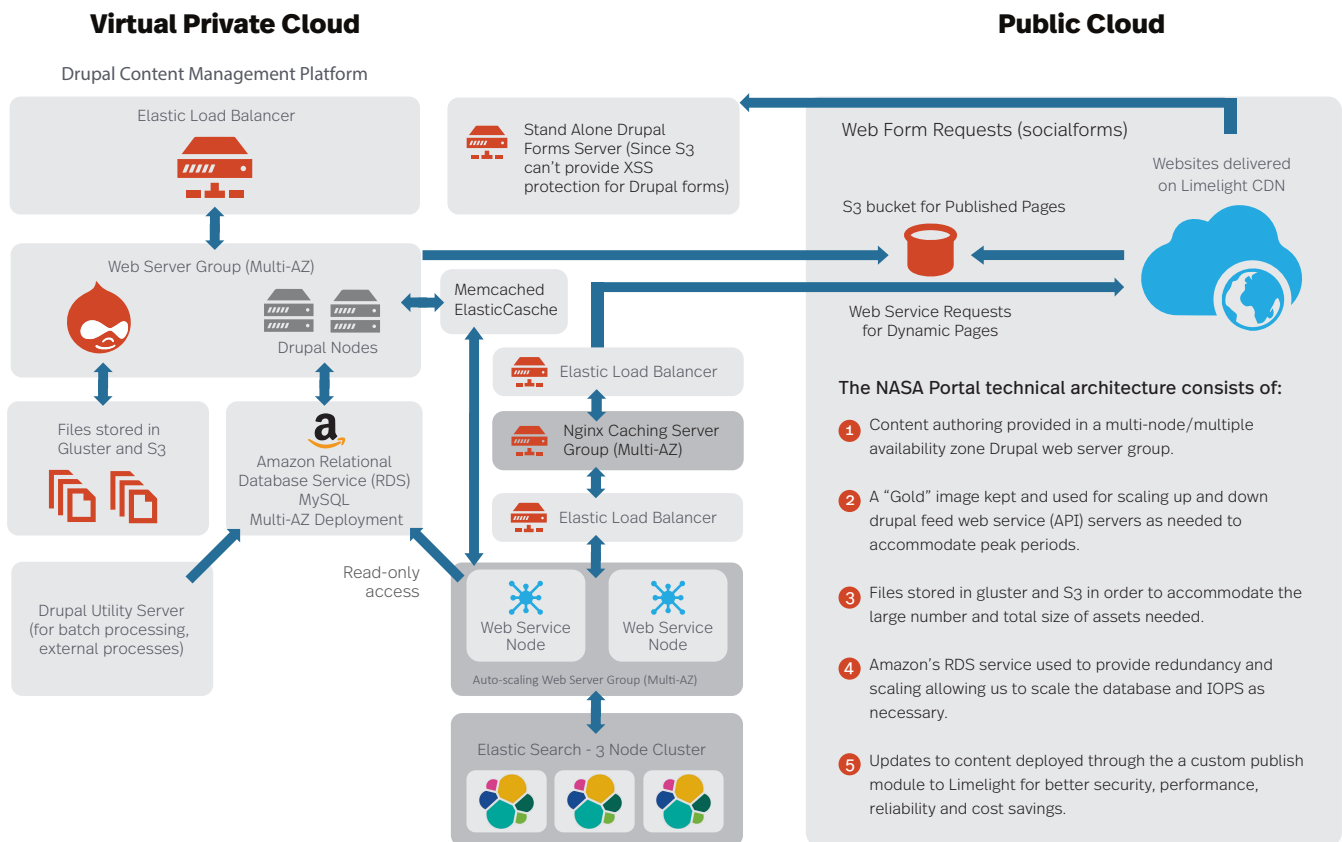
TOTAL VIEWERS
40 M

Viewers By Time



Plays By Time





AWS Architecture

Drupal Administration and Content Authoring Platform

- An auto-scaling group of web servers behind an elastic load balancer (ELB). This architecture was tested to perform without degradation under a sustained load of 250 content updates per hour. NASA averages over 1,500 content updates a day on this system.
- S3 and the Gluster File System used to store assets within the CMS. Gluster is a fully distributed file system that scales to hundreds of petabytes with linear performance. It uses replication to survive hardware failures, and automatically performs self-healing to restore performance. S3 provides a highly scalable, reliable, secure, fast, inexpensive infrastructure for storing and serving assets for the public websites.
- MySQL is used as the database for the CMS and is deployed using a Multi-AZ Amazon Relational Database Service (Amazon RDS).
- The Administration and Content Authoring Platform is housed in a Virtual Private Cloud (VPC) environment and cannot be accessed by the public.

Drupal Web Services Platform

- An auto-scaling group of web servers behind an elastic load balancer. An nginx caching layer provides tolerance against large spikes in traffic.
- These web services servers are based on the same code base as the Administration and Content Authoring Platform, but only web service responses (JSON / XML) are enabled and the servers have read-only access to the database to ensure high security.

ElasticSearch Cluster

- A 3 node elasticsearch cluster provides a RESTful API for complex dynamic feeds such as the NASA Calendar, NASA TV Schedule, latest features, and related stories

Drupal Forms Server

- For interactive forms, a separate server is used to allow for forms interaction while separating it from the main content authoring system to enhance security.

Drupal Utility Server

- A separate utility server runs regularly batch processes. This ensures that batch jobs do not consume the main content management platform resources.

Drupal Publishing Module

- Content is published using a custom Drupal publishing module. This module increases both security and performance of the overall platform. The Drupal publish module retrieves the HTML of the page (or pages) being published along with all of its related assets (files, images, videos, etc.) and copies them to an S3 Amazon bucket with appropriate cache-control headers to allow new content to be available across the CDN within 5 minutes. The static HTML pages use APIs to retrieve dynamic content from the web services platform. This architecture ensures high-availability, high-performance, and high-security as the CMS itself is completely housed within a VPC.

Take Aways

The multiple tiered cloud architecture of the website and video streaming infrastructure enabled NASA to host one of the largest events in history on the internet. The infrastructure was able to scale to easily meet the peak load and then scale back to normal operations for cost savings. It is estimated that leveraging the cloud is saving NASA close to 40% in total cost of ownership annual.

Press

NASA's success in hosting this massive online experience was covered by a number of news outlets and press releases. Read more about the event in the following articles:



- [Eclipsing Online Records: Through the Eyes of NASA Numbers](#)
- [This D.C. Tech Company Powered the NASA Solar Eclipse Livestream](#)
- [NASA Claims 40 Million Watched Live Eclipse Broadcast Via Web & Social Media](#)
- [Total Solar Eclipse was NASA's Biggest Online Event Ever](#)



Why you should choose Mobomo?

Mobomo has been partnering with agencies and organizations including NASA, USGS, GSA, NOAA, the White House, MARS, Gallup, Marriott, and Maximus to create impactful mobile, web, and cloud solutions that not only sustain record-breaking traffic, but also win design awards including Webbies, Muse Creative Awards, and Innovation Jam Awards.

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