Ensuring “All Hands on Deck” for Critical Harvard Websites
Harvard Public Affairs and Communications Leverages the Power of AWS

It’s easy enough to shrug off periodic web traffic overload as “a good problem to have” — but in the case of maintaining consistent access to critical websites at Harvard, the issue is no laughing matter. While the computing infrastructure supporting key websites for Harvard.edu, Harvard Public Affairs and Communications (HPAC), and the Harvard Campaign has historically been very stable, today’s modern news cycles can easily lead to sudden upticks in demand for updates on a developing situation, and Harvard happenings are no exception. That’s why HPAC turned to Harvard University Information Technology (HUIT) to replace the infrastructure for these critical websites with a cloud-based solution from Amazon Web Services (AWS) — a decision that proved its mettle during the recent dramatic surge in web traffic resulting from the recent ‘Extraordinary Gift’ from the Chan family to the Harvard School of Public Health.

The Problem
Harvard’s traditional website infrastructure has long delivered high levels of service to those who rely on the sites for information ranging from general-interest Harvard news and happenings to critical events and community alerts. However, these websites and the infrastructure on which they were built assumed that usage would be fixed and predictable, and they didn’t take into account extraordinary events that might drive large numbers of users to the sites — in short, the sudden surges in demand that come from real-time news updates and a community of users attempting to devour all the content related to a particular event. As a result, during times of sudden high demand, users can often experience either poor performance or a complete inability to connect while technical staff scramble to add resources to accommodate the increase in traffic. Plus, once a demand surge is over, these same technical staff are burdened with ‘scaling back’ the infrastructure so as to avoid having underutilized resources.

The Solution
Over the spring and summer of 2014, a dedicated team of HUIT systems and application professionals worked with HPAC to create the next generation of websites for harvard.edu, campaign.harvard.edu, and news.harvard.edu using infrastructure technology from Amazon Web Services (AWS). The team’s goal was to completely rethink, rework, and replace the existing infrastructure with technology that seamlessly and automatically adjusts to demand. Because of AWS’s self-scaling, distributed architecture, when site traffic increases, the underlying infrastructure resources are boosted with no manual intervention necessary. When demand subsides, resources are automatically reduced to accommodate normal usage.

The Result
The re-architected websites deliver a vastly superior level of performance to the Harvard Community, with a particularly dramatic example being the dramatic increase in site traffic resulting from the ‘Extraordinary Gift’ from the Chan family to the Harvard School of Public Health in September 2014. The Harvard Gazette was able to deliver this extraordinary news to the world with no performance issues or service interruptions — despite 1,931,810 hits September 8-9 and a peak of 2,389,647 hits September 10. Better yet, this significant improvement in site stability comes with an economic benefit: Because infrastructure resources are put into and taken out of operation on an as-needed basis, no excess cost is incurred by underutilized resources. In the case of the Chan gift, five additional servers were immediately spun up to accommodate the extra traffic, then shut back down again. The result? A lean, flexible, versatile system able to serve the entire Harvard Community — and beyond — no matter the circumstances.

Peak traffic related to the Chan gift occurred Sep. 10, 2014, with a high of 2,389,647 HTTP requests compared to a daily average hovering between 500,000 and 1,000,000.