Case study:
# FAU Serves Students, Researchers & Faculty With Zerostack Cloud

Florida Atlantic University (FAU), created in 1961 by act of the Florida Legislature, went into operation in 1964 as one of the first universities in the nation serving upper-division and graduate students exclusively. Since day one, FAU has pushed the bounds of higher education. Now, more than 50 year later, the University serves more than 30,000 undergraduate, graduate students and faculty at sites throughout its six-county service region in southeast Florida.

Based in Boca Raton, Florida, FAU's 10 colleges offer more than 180 undergraduate and graduate degree programs, and its expanding research portfolio - including biomedicine, biotechnology, ocean engineering and coastline security - has earned the University the "High Research Activity" designation from the Carnegie Foundation for the Advancement of Teaching while also engaging the community in hundreds of cultural and educational events every year.

## Supporting Engineering Education

At the FAU College of Engineering and Computer Science, professors wanted to enable students to use complex applications in the classroom and to launch virtual machines (VMs) for programming in Linux or C. The College's Technical Services Group (TSG) had tried solutions based on VMware and OpenStack/OpenCloud to support this effort, but VMware was extremely expensive due to licensing costs, and OpenStack/OpenCloud was too complex and time-consuming to maintain.

The TSG wanted to come up with a better solution. The professors needed a self-service cloud portal with user-deployable applications, managed based on role-based access and quotas. In addition, the TSG required a solution that would involve little or no operational expense.

"I had been following ZeroStack for some time, because it seemed well-suited to our needs," said Mahesh Neelakanta, director of FAU's College of Engineering and Computer Science, TSG. "The ZeroStack cloud platform has worked really well – it has done exactly what we hoped it would do."

"I had known about ZeroStack before they came out of stealth mode," said Mahesh Neelakanta, director of IT for the College of Engineering and Computer Science at FAU. "We had been in touch as they finalized their product, and we received a hardware unit to test out. The ZeroStack appliance has worked really well – it has done exactly what we hoped it would do."

## The ZeroStack Solution

The ZeroStack solution proved to be straightforward and easy to deploy. "From the time the system arrived at our loading dock to the time resources were being onsumed in the ZeroStack cloud, it took less than four hours to deploy," said Neelakanta.

"It's pretty easy to deploy because you're getting a machine that's ready to go," Neelakanta added. "You put it in the rack, plug in the network ports, give it an IP address,

"We now have self service cloud that requires very little human intervention."

and then it registers itself with the ZeroStack cloud, and you do everything through the web interface. There's really nothing to do other than giving it an IP address."

## Self-serve Applications on Demand

The result has been a complete, cost-effective solution through which academic and engineering students gained self-service access to their virtual machines and applications via ZeroStack's self-service portal.

## Florida Atlantic University: Colleges

Ten distinguished colleges offer more than 180 degree programs in fields that span the arts and humanities, the sciences, medicine, nursing, accounting, business, education, public administration, social work, architecture, engineering, computer science and more. Academically accomplished students take advantage of honors programs on the Boca Raton campus and the complete, four-year honors curriculum offered by the Harriet L. Wilkes Honors College on the Jupiter campus.

At FAU's dedication ceremony in 1964, **President Lyndon B. Johnson** challenged the University's pioneers: *"It is time now...for a new, adventurous, imaginative, courageous breakthrough for a new revolution in education in America."*

## Quick Facts:

6-Country service region

21 intercollegiate teams

180+ degree programs

4,000 students live on-campus

30,000+ active students

$154,000,000/Year in Financial Aid

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With this solution, professors could enable students to spin up additional resources as needed. The TSG benefited because the ZeroStack solution runs itself – it uses self-healing software to detect and correct anomalies as they occur, and the ZeroStack system monitors itself with cloud-managed architecture. Neelakanta estimates that his team spends just an hour or two per week managing the ZeroStack appliance.

While public cloud solutions offered similar ease of use for end users, the ZeroStack solution helps FAU keep costs under control. "Imagine Amazon Web Services (AWS) EC2, EBS and S3, but in your own data center," said Neelakanta. "You can create VMs, attach storage, do block or object storage, and then there's the ZeroStack App Store where you can launch pre-built applications like Jenkins and Cassandra."

## Workload Migration Adds Flexibility

ZeroStack's easy workload migration also makes it easy for users to move back and forth between the on-premises private cloud and the public cloud. "What we foresee is a great hybrid where we do things ourselves with a private cloud, but also use the public cloud," said Neelakanta. "There are professors who have very scalable computing needs or robust computing needs, and we might use the public cloud for those situations."

"I can foresee a scenario where someone builds a prototype in our environment with 20 VMs, and then they want to try it with 2,000 VMs, so they would move the workloads to AWS," said Neelakanta. "Users could try out a prototype in AWS, do simulations for 2000 VMs, then shut it down and come back to the 20 VMs in our environment. They would go back and forth to optimize scalability and costs. A bidirectional flow of workloads to and from ZeroStack and AWS is definitely important for research applications."

"In the end, ZeroStack gave us an elegant yet robust solution for our cloud needs and allowed us to serve our faculty, researchers and students with minimal effort from the campus IT department," said Neelakanta.

In the future, TSG hopes to scale its ZeroStack deployment by licensing the company's cloud software and running it on existing hardware in its data center. "We started with a small beta project, but we expect that we'll have hundreds or even thousands of users on the system in the coming years."