



Republic Polytechnic enhances automation, fosters student learning with Bolt and Puppet Enterprise

CASE STUDY



Industry: Education

Challenges

Republic Polytechnic's School of Infocomm (RP SOI) uses real world examples to augment lesson delivery. Each student has access to their own learning compute environment in the laboratory designed to simulate an actual scenario. The current practice of ensuring an error-free daily deployment of the lab environments is time consuming but yet critical for lesson delivery. This consumes considerable man hours for backend infrastructure support. As such, the school's infrastructure support team had to proactively review software automation tools to optimize the management of its IT infrastructure.

Customer Environment: Windows and Linux

Solution

The RP SOI technical support team applied a combination of Bolt and Puppet Enterprise, using a Puppet master in a monolithic setup integrated with GitLab. Routine scripts were run with Bolt to be rolled into Puppet tasks for streamlined daily workloads. This created uniformity across machines, redirected efforts spent correcting manual errors, and allowed the team to manage its deployment of resources more effectively.

Results

- Enhanced automation, scalability and productivity
- Significant reduction in reconfiguration and weekly environment setup time
- Enhanced collaboration between DevOps curriculum and IT infrastructure through the streamlining of new technologies

“We were looking for a solution to increase our productivity. We were having to direct a lot of time toward configuring labs for our information communications students to practice in. The capabilities of Puppet made it quite a nice fit for our school’s needs.”

Ivan Wee

Senior Lecturer, School of Infocomm

Making use of software automation as infrastructure and learning tool

Established in 2002, Republic Polytechnic is the first higher education institution in Singapore to leverage the Problem-based Learning approach for all its diploma programmes. Republic Polytechnic (RP) has seven schools and one academic centre offering 37 full-time diplomas in Applied Science, Engineering, Management and Communication, Hospitality, Infocomm, Sports, Health & Leisure, and Technology for the Arts.

In 2019, its School of Infocomm (SOI) embarked on an initiative to deploy software automation tools to manage its student lab environment and backend IT infrastructure more effectively by reducing the need to perform repetitive tasks. The RP’s SOI’s technical support team managed to significantly reduce its reconfiguration and restoration time for learning labs, allowing it to redirect its resources towards other student initiatives.

By using Bolt and Puppet Enterprise, the School of Infocomm was able to supplement its IT curriculum with industry-relevant updates.

Implementing infrastructure alongside vital tech operation

The School of Infocomm used Puppet for its resource abstraction layer to converge to a common platform using a single programming language. Puppet implements a human-readable language, also commonly referred to as Puppet DSL.

The result was a uniform and structured platform that offered simple adoption and implementation for the school’s support team, instructors, and students.

Tasks which initially required knowledge of Linux commands by trained system administrators could be delegated to any of the IT Services staff through the Puppet Enterprise console, saving resources and decreasing response time.

Supporting teaching, teaching support

To complement the School of Infocomm’s efforts to support student learning, Puppet was able to assist with providing quick configurations on a regular basis so that the school’s technical support team can spend more time innovating and less time addressing break-fix issues.

One of the students' courses, involving firewall administration, requires 20 firewalls to be configured uniformly and correctly, and had to be reset daily after the classes. With the puppet firewall module implementation, results are guaranteed to be correct and configuration time dropped from 2 hours to 15 minutes for all the firewalls. This allows the technical support team more time to render their assistance to other team members.

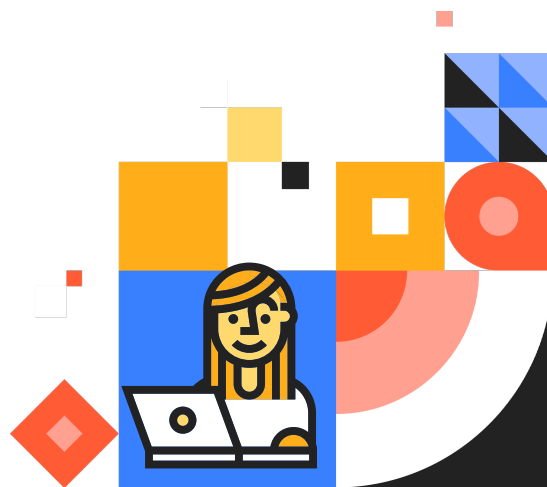
Top outcomes from using Puppet

- Relieved strain on IT Services team
- Decreased issue response time
- Improved lab setup time from 3-4 hours weekly to 10-15 minutes
- Streamlined desktop reconfiguration time from 2 hours daily to 15 minutes
- Freed up system administrator time
- Quick implementation, installation, and integration

“We were using a variety of tools to address various needs. As our collection of tools grew, it was difficult to have everyone proficient with every tool. Keeping the systems up-to-date also taxed the team. We had to keep the number of tools to a manageable number and find alternative software with feature sets that can be extended with add-ons. That’s what led us to Puppet.”

Kenny Hong

Assistant Manager, School of Infocomm



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