



The Computerworld Honors Program

Honoring those who use Information Technology to benefit society

Final Copy of Case Study

Status:

Laureate

Year:

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Organization Name:

TM Forum

Organization URL:

www.tmforum.org

Project Name:

Resilient Cloud Catalyst: Maintaining Service in the Face of Developing Threats

Please select the category in which you are submitting your entry:

World Good

Please provide an overview of the nominated project. Describe the problem it was intended to solve, the technology or approach used, how it was innovative and any technical or other challenges that had to be overcome for successful implementation and adoption. (In 300 words or less.)

When Hurricane Sandy hit the East Coast this past fall, the storm damaged everything from infrastructure to homes and businesses. Resilient Cloud Catalyst Maintaining Service in the Face of Developing Threats, the title of this TM Forum Catalyst (multi-vendor technology demonstrator) project developed by members of the TM Forum's Security Program, demonstrated how to maintain critical system resources by monitoring risks like Hurricane Sandy and proactively managing the physical resources of a cloud environment that supports mission-critical services. This project used scenarios, such as the snow and ice storm that crossed the U.S. in 2011, to simulate a developing threat that is jeopardizing the operation of several major data centers and endangering the mission-critical applications hosted in those centers. In addition to this scenario, the team also explored a Distributed Denial of Service Attack and a civil unrest scenario. In typical threat scenarios, the network is capable of reacting only once it has become impaired and service is disrupted. In this project, the use of geographic information

system (GIS) technology provided an added level of capability to the network monitoring and management system. Using GIS, the management system was able to proactively detect and identify a developing threat, and model its potential impact on the network prior to any actual impairment. Such advanced notice provides time to identify critical services that could be disrupted and securely relocate those critical services to safe network resources. This proactive approach ensures continued availability of services without relying solely on a traditional network alarm, and without a service interruption to trigger resource reallocation. The project team used a variety of technologies and common off-the-shelf (COTS) products to address threat detection and notification, service management (quality-of-service policies), and security and auditing.

When was this project implemented or last updated? (Please specify month and year.) Has it incorporated new technologies and/or other innovations since its initial deployment? (In 300 words or less.)

The project was conceived in January 2012 by a Communications Service Provider, three vendors, and an integrator. A proof-of-concept demonstration was given in May 2012.

Is implementation of the project complete? If no, please describe the project's phases and which phase the project is now in. (In 300 words or less.)

This project is part of TM Forum's renowned Catalyst program, an innovative approach to launching and creating leading-edge solutions. Catalysts are short-term collaborative projects that strive to create solutions for critical industry operational and systems challenges that are defined by end users such as service providers, MSOs, defense agencies, enterprise IT departments and more. With an accelerated timeline Catalyst projects are able to develop and enhance TM Forum's best practices and standards, including Frameworx, and create solutions to pressing issues. At the culmination of these projects, Catalysts have the opportunity to display their findings with live demonstrations at TM Forum's Management World events. For this Resilient Cloud Catalyst project, the first phase of the project is complete, and the technologies applied and lessons learned from this project are now being applied to real-world solutions. There may be future phases to harden interfaces or address additional threat scenarios. In addition, the team is considering using big data analytics in a future phase to better understand civil unrest scenarios and develop supporting resiliency use cases. Other cyber security threats, like a worm inside a data center, could benefit from this solution, too.

Please provide at least one example of how the technology project has benefited a specific individual or organization. Feel free to include personal quotes from individuals who have directly benefited from the work. (In 300 words or less.)

The technologies applied and lessons learned from this project are now being applied to real-world cloud solutions where resiliency in the face of threats is required. Most notably, these technologies are being evaluated in the defense industry, where managing critical ICT resources in the face of developing threats saves lives, but other industries, such as medical and financial, that require resiliency and robustness could benefit as well. According to Michael Lawrey, Executive Director, Telstra, "Cloud

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computing offers significant financial and operational benefits for Government and enterprise environments, but it comes with challenges. This means telecommunications and information service providers need to establish a resilient and secure environment that meets customer expectations especially when it comes to sovereignty and physical and logical security. Telstra recognises the importance of security and works closely with its vendors and suppliers to promote robust solutions that will minimise and mitigate risks. The Catalyst initiatives run by the TM Forum also help Telstra draw and learn from what the industry needs to do to give customers the confidence they expect when sharing and providing their important and sensitive data to a service provider."

Would this project be considered an innovation, a best practice or other notable advancement that could be adopted by or tailored for other organizations and uses? If yes, please describe that here. (In 300 words or less.)

This project is considered an innovation, but it leverages both COTS products and TM Forum standards and best practices, which are available today. What makes this project unique is the out-of-the-box thinking that went into solving the cloud resiliency problem, and the way the products, standards, and best practices were applied to the solution. Situational awareness is a concept that is used quite often in defense, and this project is an example of how proactive measures can be made to prevent service disruption by understanding emerging threats that could potentially impact critical cloud resources.

If there are any other details that the judges should know about this project, please note them here. (In 300 words or less.)

Cloud technology relies on physical resources, which are vulnerable. There are many threats that pose risk to these resources today along with emerging threats that have not been identified, yet our dependency on critical services running in the cloud grows. As far as we know, our solution is unique. In addition, it can be extended to address a variety of threat vectors as mentioned previously. Also, as was mentioned earlier, the solution was demonstrated, and is repeatable by anyone wanting to provide resilient, robust cloud architecture for critical resources.