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Automating Cloud Security Authorizations

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SECURITY IS A MAJOR CONCERN FOR CLOUD COMPUTING. THE REQUIREMENTS AND CHALLENGES OF A POTENTIAL SOLUTION MODEL ARE EXAMINED

This article describes the challenges and solutions for Security Authorization in a cloud based services environment. We describe Compliance as a Service (CaaS) that supports various service models as well as the deployment models in cloud-based environment. This makes the solution elastic, metered and cost effective, all characteristics of a cloud based offering. The CaaS solution addresses the complex Security Certification and Authorization (C&A) needs of Cloud based Systems. The solution should address various regulations such as FISMA, HIPAA as well as incorporates Information Assurance (IA) frameworks like the NIST 800-53rev3, DIACAP DODI 8500.2, FedRAMP, CNSS 1253 as well as ISO 27001

Security Certification Scope of Cloud Computing Infrastructure in C&A

“Cloud computing has been defined by NIST as a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or cloud provider interaction. Cloud computing technologies can be implemented in a wide variety of architectures, under different service and deployment models, and can coexist with other technologies and software design approaches. The security challenges cloud computing presents, however, are formidable, especially for public or hybrid clouds whose infrastructure and computational resources are part or fully owned by an outside party that sells those services to the general public.”, NIST-Draft-SP800-144

The CaaS solution can be used in private, public, hybrid or a community cloud deployment model. It fully implements the six-step Risk Management Framework (RMF) described in NIST Special Publication (SP) 800-37Rev.1. The CaaS solution can be embedded in the cloud by a Cloud Service Provider (CSP) or used by an Cloud Services Customer (CSC) for private cloud or hybrid cloud-based Systems, to certify and maintain the Security Authorization of the Information System.

Security Authorization Challenges in the Cloud

Cloud computing is not a single capability, but a collection of essential characteristics that are manifested through various types of technology deployment and service models. The NIST definition of cloud computing, with three service models; Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS) and four deployment models are shown in figure below:

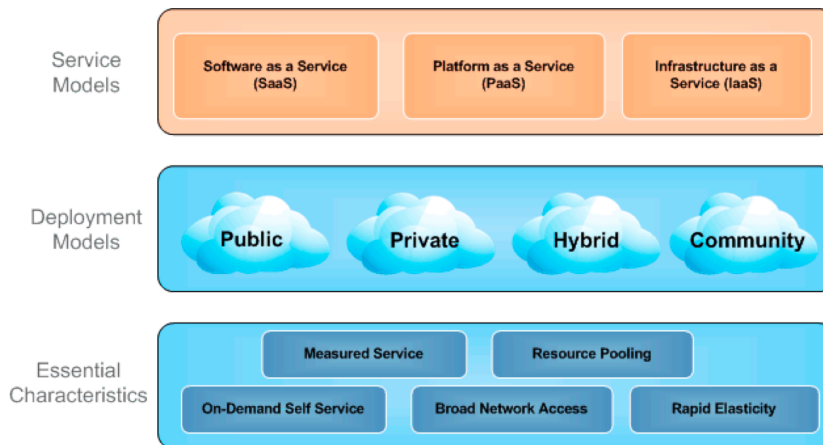


Figure 1: NIST definitions

The decision to embrace cloud-computing technology is primarily a risk-based decision, not a technology based decision for scalability and performance. Though, a CSC may transfer the risk of cloud computing to

October 2011
Vol. 14, Number 4

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