

Nist Cloud Computing Reference Architecture

== Concept == In 2011, the need to extend cloud computing with fog computing emerged, in order to cope with huge number of IoT (Internet of Things) devices and big data volumes for real-time low-latency applications. Fog computing, much like edge computing, is intended for distributed computing where numerous "peripheral" devices connect to a cloud. The word "fog" refers to its cloud-like properties, but closer to the "ground", i.e. IoT devices. Many of these devices will generate voluminous raw data (e.g., from sensors), and rather than forward all this data to cloud-based servers to be processed, the idea behind fog computing is to do as much processing as possible using computing units co-located with the data-generating devices, so that processed rather than raw data is forwarded, and bandwidth requirements are reduced. An additional benefit is that the processed data is most likely to be needed by the same devices that generated the data, so that... **Development and uses**

Cloud Security Alliance ". within cloud computing, artificial intelligence and to provide education on the uses of cloud computing to help secure all other forms of computing. " The Cloud Security Alliance (CSA) is a not-for-profit organization with the mission to "promote the use of best practices for providing security assurance within cloud computing, artificial intelligence and to provide education on the uses of cloud computing to help secure all other forms of computing

== Characteristics == PaaS can be delivered in three ways: **Overview ==** The OpenFog consortium merged with the Industrial Internet Consortium, now the Industry IoT Consortium, on January 31, 2019.

Enterprise architecture framework This allows for making systemic design decisions on all the components of the system and making long-term decisions around new design requirements, sustainability, and support. (NORA) – a reference framework from the Dutch Government E-overheid NORA NIST Enterprise Architecture Model Treasury Enterprise Architecture Framework An enterprise architecture framework (EAF) defines how to create and use an enterprise architecture. It structures architects' thinking by dividing the architecture description into domains, layers, or views, and offers models – typically matrices and diagrams – for

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documenting each view. An architecture framework provides principles and practices for creating and using the architecture description of a system f1330e8384

Cloud broker Retrieved 24 May 2026. NIST Computer Security Resource Center. As cloud computing evolves, the integration of cloud services may be too complex for cloud consumers to manage alone. cloud offerings. "Cloud Broker". "NIST Cloud Computing Security Reference Architecture" A Cloud Broker is an entity that manages the use, performance and delivery of cloud services and negotiates relationships between cloud providers and cloud consumers f1330e8384

Fog computing computing), storage, and communication locally and routed over the Internet backbone. In 2011, the need to extend cloud computing with fog computing emerged Fog computing or fog networking, also known as fogging, is an architecture that uses edge devices to carry out a substantial amount of computation (edge computing), storage, and communication locally and routed over the Internet backbone f1330e8384

In such cases, a cloud consumer may request cloud services from a cloud broker, instead of contacting a cloud provider directly, according to NIST Cloud Computing Reference Architecture. f1330e8384 In 2014, the Chairman of the Board of the CSA was Dave Cullinane, VP of Global Security and Privacy for Catalina Marketing, St. Petersburg, Florida, and former CISO for eBay. Cullinane has said, "If you have an application exposed to the Internet that will allow people to make money, it will be probed." f1330e8384

OpenFog Consortium OpenFog Reference Architecture for Fog Computing [https://www. 5 April 2016. iiconsortium. org/pdf/OpenFog_Reference_Architecture_2_09_17. pdf](https://www.openfogconsortium.org/pdf/OpenFog_Reference_Architecture_2_09_17.pdf). Accessed Nov The OpenFog Consortium (sometimes stylized as Open Fog Consortium) was a consortium of high tech industry companies and academic institutions across the world aimed at the standardization and promotion of fog computing in various capacities and fields f1330e8384

Cloud computing It is commonly referred to as "the cloud". computing Category:Cloud computing providers Category:Cloud platforms Cloud computing architecture Cloud broker Cloud collaboration Cloud-computing comparison Cloud computing is defined by the International Organization for Standardization (ISO) as "a paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on demand" f1330e8384

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The components of an architecture framework provide structured guidance that is divided into three main areas: f1330e8384

Cloud computing issues Cloud providers offer tools, such as AWS Artifact (compliance documentation. Service agreements and shared responsibility models define the boundaries of control and accountability between the cloud provider and the customer, but misunderstandings or mismanagement in these areas can still result in security breaches or accidental data loss. Cloud computing enables users to access scalable and on-demand computing resources via the internet, utilizing hardware and software virtualization. Despite its advantages, cloud computing also faces several challenges. This loss of control can create uncertainties regarding data privacy, unauthorized access, and compliance with regional regulations such as the General Data Protection Regulation (GDPR), the Health Insurance Portability and Accountability Act (HIPAA), and the California Consumer Privacy Act (CCPA). It Cloud computing enables users to access scalable and on-demand computing resources via the internet, utilizing hardware and software virtualization. It is a rapidly evolving technology capable of delivering extensible services efficiently, supporting a wide range of applications from personal storage solutions to enterprise-level systems. Privacy concerns remain a primary issue, as users often lose direct control over their data once it is stored on servers owned and managed by cloud providers f1330e8384

The CSA has over 80,000 individual members worldwide. The CSA gained significant reputability in 2011 when the American Presidential Administration selected the CSA Summit as the venue for announcing the federal government's cloud computing strategy. f1330e8384 == History == f1330e8384 According to the Storage Networking Industry Association (SNIA), storage security represents the convergence of the storage, networking, and security disciplines, technologies, and methodologies for the purpose of protecting and securing digital assets. Historically, the focus has been on both the vendor aspects of making storage product more secure and the consumer aspects associated with using storage products in secure ways. f1330e8384 == History == f1330e8384 The CSA was formed in December 2008 as a coalition by individuals who saw the need to provide objective enterprise user guidance on the adoption and use of cloud computing. Its initial work product, Security Guidance for Critical Areas of Focus in Cloud Computing, was put together in a Wiki-style by dozens of volunteers. f1330e8384

Computing Computing is any goal-oriented activity that requires, benefits from, or creates computing machinery. Computing encompasses scientific, engineering, mathematical, technological, and social aspects.

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Major computing disciplines include computer engineering, computer science, cybersecurity, data science, information systems, information technology, and software engineering. It includes the study and experimentation of algorithmic processes, and the development of both hardware and software. It includes the study and experimentation of algorithmic Computing is any goal-oriented activity that requires, benefits from, or creates computing machinery f1330e8384

The idea for a consortium centered on the advancement and dissemination of fog computing was thought up by Helder Antunes, a Cisco executive with a history in IoT, Mung Chiang, then a Princeton University professor and now President of Purdue University, and Dr. Tao Zhang, a Cisco Distinguished Engineer and CIO for the IEEE Communications Society then and now a manager at the National Institute of Standards and Technologies (NIST... f1330e8384 Enterprise architecture regards the enterprise as a large and complex system or system of systems. To manage the scale and complexity of this system, an architectural framework provides tools and approaches that help architects abstract from the level of detail at which builders work, to bring enterprise design tasks into focus and produce valuable architecture description documentation. f1330e8384 == Introduction == f1330e8384

Platform as a service platform-based service is a cloud computing service model where users provision, instantiate, run and manage a modular bundle of a computing platform and applications Platform as a service (PaaS) or application platform as a service (aPaaS) or platform-based service is a cloud computing service model where users provision, instantiate, run and manage a modular bundle of a computing platform and applications, without the complexity of building and maintaining the infrastructure associated with developing and launching application(s), and to allow developers to create, develop, and package such software bundles f1330e8384

The term computing is also synonymous with counting and calculating. In earlier times, it was used in reference to the action performed by mechanical computing machines, and before that, to human computers. f1330e8384 == History == f1330e8384 The consortium was founded by Cisco Systems, Intel, Microsoft, Princeton University, Dell, and ARM Holdings in 2015 and now has 57 members across the North America, Asia, and Europe, including Forbes 500 companies and noteworthy academic institutions. f1330e8384 In 2011, the National Institute of Standards and Technology (NIST) identified five "essential characteristics" for cloud systems. Below are the exact definitions according to NIST: f1330e8384

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Storage security Security framework for cloud computing Recommendation ITU-T Y. 3500 | ISO/IEC 17788:2014, Information technology — Cloud computing — Overview and vocabulary Storage security is a specialty area of security that is concerned with securing data storage systems and ecosystems and the data that resides on these systems f1330e8384

OpenFog was created on November 19, 2015, by ARM Holdings, Cisco Systems, Dell, Intel, Microsoft, and Princeton University. f1330e8384

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