

Email Clustering and Cloud Email Services

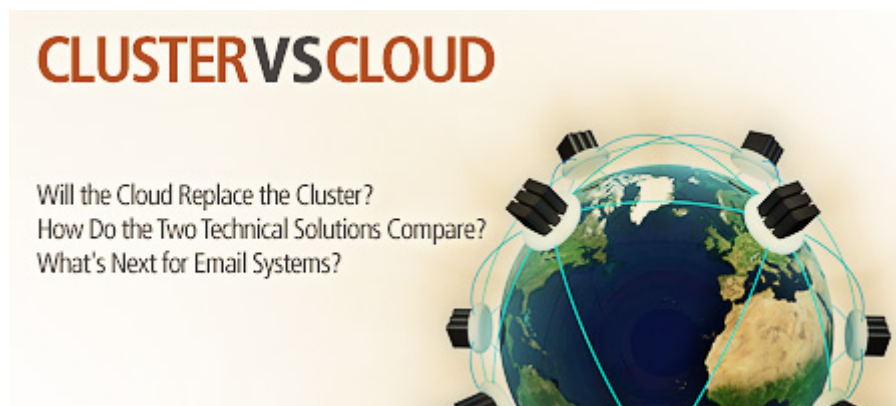
- A look at the concepts governing the present and the future, respectively, of the IT industry –

□ Preamble

Lately, there has been a lot of buzz about the brand new **Cloud Computing** paradigm. Supposedly, through this type of cloud resource, you would get the same performance and user experience levels as with classic systems. Some companies have moved word and spreadsheet processors online, while others plan to allow users to play HD quality games on demand, over the Internet – all striving to move from regular desktop related applications onto the Web.

Cloud computing yields a series of palpable benefits such as a lower TCO for both service providers and their customers, while also attempting to overcome the main concerns of privacy and security advocates in the IT industry.

This white paper aims to compare the older, industry-proven technology used in clustering systems today and the new trend in information technology – cloud computing, and to answer some of the questions revolving around these topics.



□ Will the Cloud Replace the Cluster?

This is surely the most obvious question of all when it comes down to analyzing the future development of the situation. However, it is one of the most interesting as well, because cloud-type resources are actually served by what is called a **decentralized cluster**.

Thus, while on a regular cluster you have a central nervous point (the storage, for the highly available one, or the controller for grids etc.), in a cloud all systems perform any and all tasks just as good. The cluster is a well structured and divided environment that relies on role configuration for each node and workload distribution according to technical limitations. The cloud on the other hand will divide the workload internally according to external requirements and user preference, rather than technical limitations.

Within a fully developed and featured cloud, the concepts of **statefull** and **stateless** process / information no longer have any impact on how the system reacts. All data is readily accessible to any computer in the setup; moreover, any computer can serve any request initiated by any client.

This extensive use of “any” is what makes the cloud so wonderful to the industry in the sense that it offers a lot of freedom and that will most likely re-write most of our preconceived ideas about how communications take place.

However, node roles may still exist within today’s cloud platforms, as with regular clusters (i.e. front-end, back-end, mailstore, database etc.). This is part of a natural evolution of the cluster, very much like a transition state. Consequently, the cloud will develop into this magnificent entity later on, as we learn to deal with the burdens of deploying one along the way. This will essentially be the natural evolution of the cluster and the only direction that makes sense given the technological status and demand of the industry.

□ How Do the Two Technical Solutions Compare?

This second most likely question is very adequate as well: why would anyone need to replace a cluster in the first place? Such high-end solutions are expensive and very resilient on their own, so is there a real need to go any further? To answer this, we’ll have to take a look at some widely used systems to see what’s currently missing and what else can be gained by such a move.

We’ll use email systems as an example because each and every company today uses either an in-house (in-sourced) email server or a hosted paid service run by a third party (outsourced). There is no other way around email communication services, short of using the FAX system to deliver documents.

Email clusters rely on two or more layers of systems (usually called tiers) that perform tasks within one of the following categories:

- **Statefull tasks** – they rely on persistent data that must be saved for each session, like the contents of an email message.
- **Stateless tasks** – they rely on temporary information that is relevant to one individual session only, such as the authentication state of a connection.

As stated before, such categories do not apply when deploying a cloud setup, as all systems are able to perform both **statefull** and **stateless** tasks. This fact results in significant advantages such as the full balancing capability between the systems. This specific capability is also inherited from the cluster technology by the AXIGEN Mail Server and several of its market competitors. However, all products are limited – as far as regular clusters are concerned, because load balancing is not possible in the case of **statefull transactions**; using a cloud makes this possible and solves some of the most important puzzles related to email clusters today.

Lastly, one of the differentiating factors between clustered and cloud systems today is represented by the availability and integrity of data. These two very different (up to now) attributes are brought together by cloud computing in a single concept of information decentralization. Data (e.g. email messages) is no longer stored in a single location by one computer or a central storage point. Every bit of information is cached, stored and retrieved from its initial storage location by any node of the cloud, as per the requirements of the client or user requesting access to the data in question.

This enables on-the-fly backup and restore operations to take place without any impact on cloud performance, including long distance replication of data, thus covering and improving the technology known today as geo-clustering. This level of performance and reliability cannot be achieved by any current email solution deployment environment.

□ So...What's Next for Email Systems?

This is the final and most intriguing question of all. Given the way things have turned up for the cloud until this very day, it's hard to say exactly how the story will unfold, especially if we add email to the equation.

For the time being, cloud adoption has increased during the past two years and it is very likely this trend will continue and become increasingly popular as time goes by. However, cloud technology is still quite a few years away from becoming the main-stream approach to deploying an Internet email service. With AXIGEN Mail Server being cluster, cross-platform, cross-architecture and SaaS ready, the move towards cloud computing represents the next logical step in the future of this technology.

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