Instigating Effective Cloud Computing Techniques for elevating Agriculture Domain

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Abstract:

Cloud computing is a distributed computing technology, through a computer network the enormous computing handler will be split and analyzed by a number of individual servers, then ultra millions or even hundreds of millions of information services will be accessible within seconds, so the users not only can get super computing capabilities but also can reduce resource inputs and waste. With the use of Cloud computing techniques in agriculture fields having the high chance of development in India. An effective performance of cloud computing is encouraging in agricultural sector. Cloud Computing is emerging today as a commercial infrastructure that reduces the need for maintaining high-priced computing hardware, software, Information technology, staff, infrastructure, recourses and their maintenance. Cloud computing is a network-based environment that concentrates on sharing computations, Cloud computing networks access to a shared group of configurable networks, servers, storage, service, applications & other important computing resources. In modern era of cloud computing technology very supportive for centralized the allagricultural related data bank (Soil-related, weather, Research, Crop, Farmers, Agriculture marketing, fertilizers and pesticide information) in the cloud.

INTRODUCTION

Cloud computing is a tool to make IT oriented services available in a easy manner hiding the difficulties ofthose services, without knowing and getting involved in the technicalities of how and what to do in given that the required services. The term "*cloud computing*" is given to this approach because the users do not really need to know who is giving that services and users consider that the services are rendered by the cloud – an unfamiliar to them. The attraction of cloud computing is that the services may be availed whenever and wherever needed. It also decrement the cost of availing those services significantly. At the same time, it offers the involvement of very smaller amount manpower and maintenance of that particular services. It also helps users free from certain concerns such as buying software, maintaining them up to date, maintenance of data etc. All these issues would be considered by the Cloud providers. Cloud computing provides various models based on user requirement.

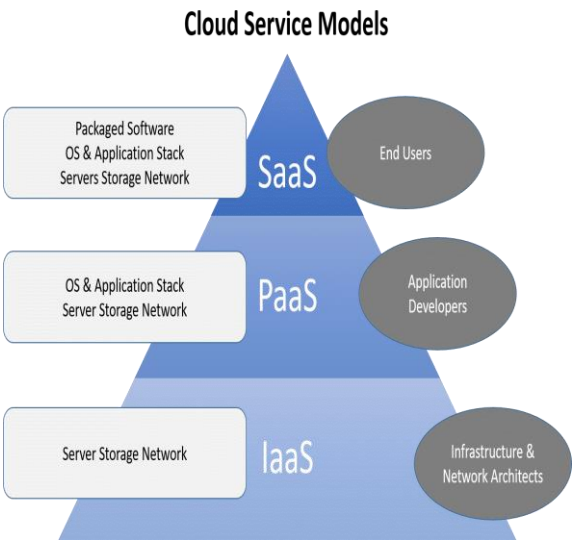
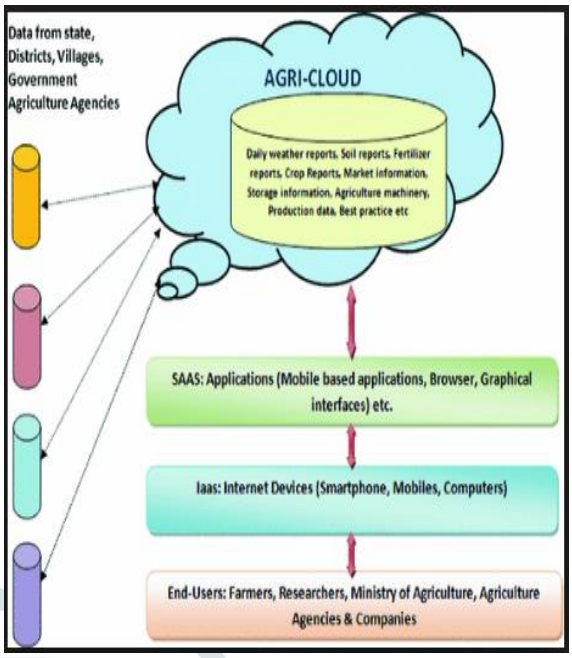


Fig.1: Basic Cloud Service Models

ROLE OF CLOUD COMPUTING AGRICULTURE DEVELOPMENT

Cloud computing applications in agriculture makes agricultural producers do not need too much hardware andsoftware cost, do not need to expert advanced knowledge of computer and network technology; they canenjoy a more professional and more widespread services. The client just need to send the request to thecloud, then resources delivery centre will analysis and handle dynamically, and finally the corresponding processing results will be passed back to the client. For this calculation, the user does not need to know theestimate principle and process, simply according to the amount to pay. Agricultural producers can get planting and breeding techniques, pest manage knowledge, and can also track and monitor the entire process of animals and plants from production, circulation to consumption, to achieve the scientific method in market forecasting, business decision-making, information collection and logistics.



Cloud computing application and implementation will play the following role:

(1) Agricultural Informatization

Agricultural information construction in China is quite weak, compared with developed countries is stilllagging behind. Some local government investment in the information construction is very insufficient, and producers can't give enough concentration to the information, so low level of information sharing loaded the process of the construction of agricultural information seriously (Qian, 2012). At present, import cloud computing technologies into agricultural industry, ascertain information network services platform, the level of Agricultural informatization will be a qualitative improving.

(2)Efficient use of agricultural resources

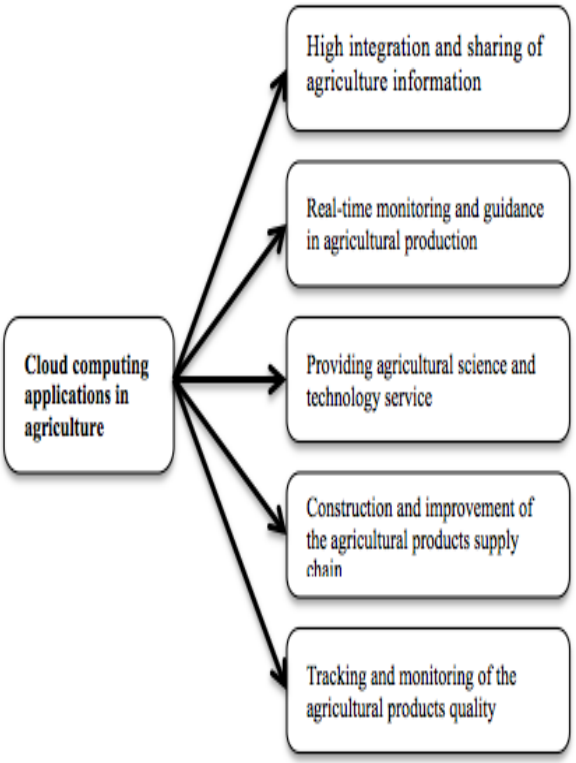
Decentralized management of agricultural production leads to small utilization of agricultural resources. However, cloud computing can incorporate isolated production facilities, technical tools, information services and other

resources successfully; this form of paid services like as easy to buy hydropower (Cui, 2011).

(3) Promote the circulation of agricultural products

Currently, agricultural producers handling a important difficulty are the problem of sales of agricultural products.In China, farmers and consumers at both ends of the supply chain are not easy to gain much benefit becauseof small quantity direct sales, long distribution chain and difficult link. Cloud computing will establish a bridge of contact between farmers and consumers; it is not only beneficial to the farmers to manufacture marketable products, as well as favourable to the realization of the value-added of the agricultural products.

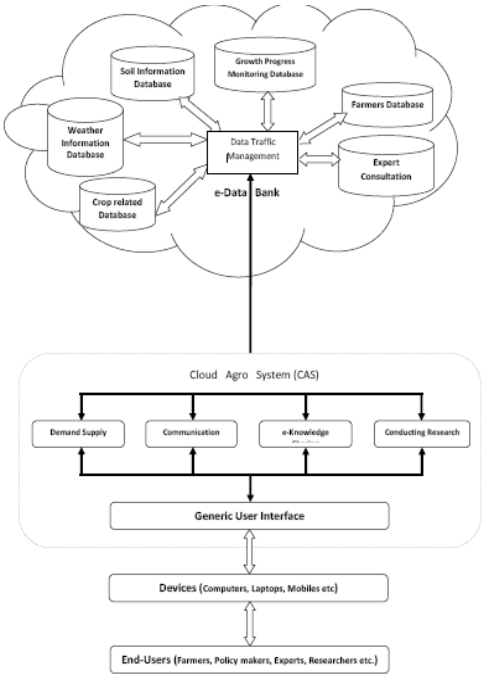
APPLICATIONS OF CLOUD COMPUTING FOR AGRICULTURE



LITERATURE REVIEW

Application Of Cloud Computing In AgriculturalDevelopment Of Rural India

Rakesh Patel et al.[1] suggested a Cloud Agro System for executing cloud computing as an ICT tool in Indian Agriculture Sector of Bhutan. If the suggested model is executed properly, will benefit all the disturbed sectors to a great extend.



The Model bridges information Gap inside and outside the nation.

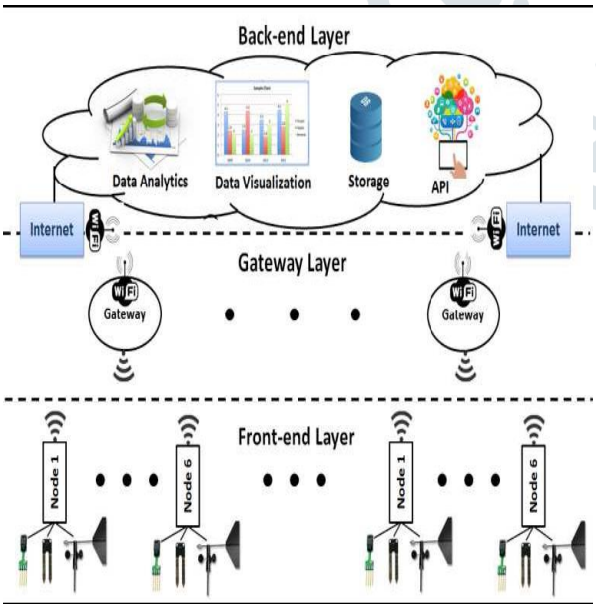
Cloud Computing and Agricultural Development of China: Theory and Practice

Yanxin et al [2]used the cloud computing to the agriculture development of China, and also be the predictable choice to attain modernizationand informatization in agriculture. However, all-level governments should be completely aware that its implementation will be a long exploring process, particularly in the weak infrastructure and information structure agriculture area, where the application complications are hard to imagine.

They recommended the implementation of cloud computing technology in agriculture such as Build Cloud Computing Data centres, Integrate Agricultural Resources, Develop the Information service ability of the agriculture sector, Give attention to the agricultural information Security.

Design and Implementation of a Cloud-based IoTScheme for Precision Agriculture

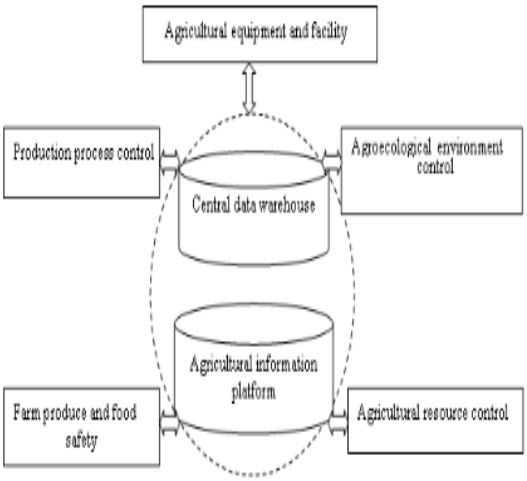
Ahmed Khattab et al [3] presented an IoT architecture modified for precision agriculture applications.The proposed three-layer architecture collects the required data and relays it to a cloud-based back-end where it is processed and analyzed. The Analyzed data can be sent back to the front-end nodes depends on the Feedback. They built a prototype of the proposed architecture to display its performance advantages.Their Proposed Architecture:



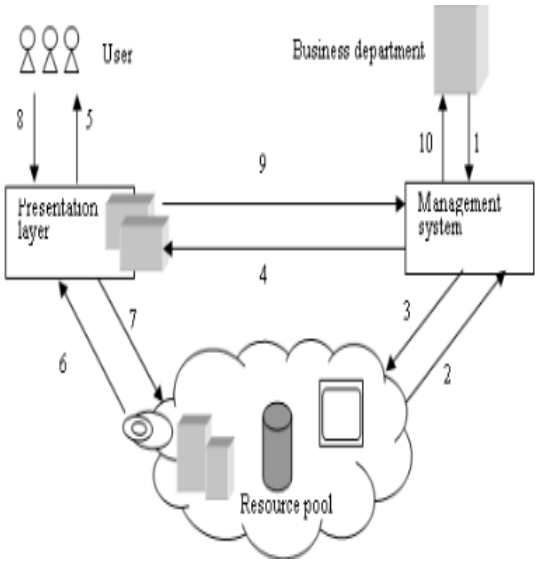
The beginning performance evaluation results have demonstrated the efficiency of the proposed architecture – despite its simplicity. This makes the proposed architecture a good candidate for executing a broad set of precisionagriculture systems. Their future work will include how to protect the access of the data and will develop a mobileapplication that allows right to use of the data on handheld devices.

Smart Agriculture Based On Cloud and IoT

Fan TongKe [4] presented that Agricultural information cloud is constructed based on cloud computing and smart agriculture is constructed with mixture of IOT and RFID. Hardware resources in agricultural information network are incorporated into resource pool via vitalization technology, achieving dynamic distribution of resource and balance of load, radically improve efficiency of resource using. Huge amount of data obtained by using radio frequency identification, wireless communication, automatic control, information sensing techniques of IOT are processed with agricultural information cloud, truly realizing smart agriculture.



Control Architecture of smart agriculture based on cloud and IoT



Data Centre Architecture based on cloud network

CONCLUSION

This paper showed the basic of cloud computing and its possibilities of use in agricultural field. Various models used in agricultural field based on cloud computing is discussed in this work. So we conclude that, focusing this cloud computing in this agriculture field will be an emerging trend. In future , there will be a great development based on this work.

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