

Cloud Based Warehouse Management Firm

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ABSTRACT: The development of parallel computing, distributed computing, grid computing and virtualization technologies which defines the shape of a new era is nothing but Cloud Computing. It is an emerging model of business computing. Representing the central unit in the software structure of a warehouse is a Warehouse Management System. The WMS receives orders from the overlying host system, mostly an ERP system, manages these in a database and, after appropriate optimization, supplies them to the connected conveyor systems. In this paper we propose to host a dynamic web application which will manage the warehouse efficiently which will manage multiple users, multiple warehouses, stock inward and outward, graphical analysis for Product Stocks, Purchase Order, Stock In and Stock out. We will use software-as-service (SaaS) to provide this management.

Key words: Cloud computing, Warehouse management, SaaS.

1. INTRODUCTION

A warehouse management system (WMS) is a software application, designed to support warehouse or distribution center management and staff. They facilitate management in their daily planning, organizing, staffing, directing, and controlling the utilization of available resources, to move and store materials into, within, and out of a warehouse, while supporting staff in the performance of material movement and storage in and around a warehouse.

What is Cloud Computing?

An information technology (IT) paradigm, a model for enabling ubiquitous access to shared pools of configurable resources (such as computer networks, servers, storage, applications and services), which can be rapidly provisioned with minimal management effort, often over the Internet is known as Cloud Computing[3].

Cloud computing providers offer services based on three basic service models

- 1) **IaaS:** Infrastructure as service.
- 2) **PaaS:** Platform as service
- 3) **SaaS:** Software as service.

In this project we are using Software as service(SaaS).

About SaaS

A common delivery model for many business applications, including Accounting, Collaboration, Customer Relationship Management (CRM), Management Information Systems is SaaS. The providers install and operate application software in the cloud and cloud users access the software from cloud clients. The prominent features of service models of the cloud computing are the reason behind the familiarity of this computing model. Software cloud (i.e. SaaS focusing on middleware as a service, or traditional CRM as a service)[4]

2. LITERATURE SURVEY

A web based software application, designed to support warehouse or distribution center management or vendors or company and employee is WMS.

Now-a-days mostly WMS are standalone application, due to which Vendor or supplier or end customers are not able to check stock information in warehouse. It needs high maintenance and not possible to manage multiple warehouses. Internal transfer between two warehouses is not possible.

This facilitates management in their daily planning, organizing, staffing, directing, and controlling the utilization of available resources, to move and store materials into, within, and out of a warehouse, while supporting staff in the performance of material movement and storage in and around a warehouse. It will also provide a Graphical Analysis for Products Stocks, Purchase Order, Stock In and Stock out.

Paper Contain:

1. Cloud Computing-

An information technology (IT) paradigm, a model for enabling ubiquitous access to shared pools of configurable resources (such as computer networks, servers, storage, applications and services), which can be rapidly provisioned with minimal management effort, often over the Internet is known as Cloud Computing. It allows users and enterprises with various computing capabilities to store and process data either in a privately-owned cloud, or on a third-party server located in a data centre - thus making data-accessing mechanisms more efficient and reliable. Cloud computing relies on sharing of

resources to achieve coherence and economy of scale, similar to a utility.

Cloud computing allows companies to avoid/minimize up-front IT infrastructure costs. As well, third-party clouds enable organizations to focus on their core businesses instead of expending resources on computer infrastructure and maintenance. Proponents also claim that cloud computing allows enterprises to get their applications up and running faster, with improved manageability and less maintenance, and that it enables IT teams to more rapidly adjust resources to meet fluctuating and unpredictable business demand. A "pay-as-you-go" model is typically used by cloud providers. This could lead to unexpectedly high charges if administrators are not familiarized with cloud-pricing models.

2. WMS-

A Warehouse Management System (WMS) is a software application, designed to support warehouse or distribution center management and staff. It improves management in their daily planning, organizing, staffing, directing, and controlling the utilization of available resources, to move and store materials into, within, and out of a warehouse, while supporting staff in the performance of material movement and storage in and around a warehouse.

The support to the warehouse staff in performing the processes required to handle all of the major and many minor warehouse tasks such as receiving, inspection and acceptance, put-away, internal replenishment to picking positions, picking, packing, order assembly on the shipping dock, documentation, and shipping (loading onto carrier vehicles) is provided by Warehouse Management Systems. A WMS also helps in directing and validating each step, capturing and recording all inventory movement and status changes to the data file.

A warehouse management system usually represents the central unit in the software structure of a warehouse. The WMS receives orders from the overlying host system, mostly an ERP system, manages these in a database and, after appropriate optimization, supplies them to the connected conveyor systems. This becomes clear when you look at the processes necessary for E-Commerce.

3. SaaS-

SaaS has become a common delivery model for many business applications, including Accounting, Collaboration, Customer Relationship Management (CRM), Management Information Systems. Cloud providers install and operate application software in the cloud and cloud users access the software from cloud clients. The service models of the cloud computing has prominent features which are the reason behind the familiarity of this computing model.

Rather than purchasing software to install, or additional hardware to support it, customers subscribe to a SaaS offering. Generally, they pay for this service on a monthly basis using a pay-as-you-go model. Transitioning costs to a recurring operating expense allows many businesses to exercise better and more predictable budgeting. Users can also terminate SaaS offerings at any time to stop those recurring costs. Cloud services like SaaS offer high scalability, which gives customers the option to access more, or fewer, services or features on-demand. Since SaaS applications are delivered over the Internet, users can access them from any Internet-enabled device and location.

SaaS is closely related to the ASP (application service provider) and on demand computing software delivery models. The hosted application management model of SaaS is similar to ASP: the provider hosts the customer's software and delivers it to approved end users over the internet. In the software on demand SaaS model, the provider gives customers network-based access to a single copy of an application that the provider created specifically for SaaS distribution. The application's source code is the same for all customers and when new features are functionalities are rolled out, they are rolled out to all customers. Depending upon the service level agreement (SLA), the customer's data for each model may be stored locally, in the cloud or both locally and in the cloud.

Organizations can integrate SaaS applications with other software using application programming interfaces (APIs). For example, a business can write its own software tools and use the SaaS provider's APIs to integrate those tools with the SaaS offering.

Advantages:

- Cloud Based Application
- Very Low maintains cost.
- Multiple user management.
- Multiple warehouse management.
- Stock inward and outward by using barcode scanning
- Graphical Analysis for Product Stocks, Purchase Order, Stock In and Stock out.
- User Management
- Increased Visibility
- Speed & Access to Real-Time Data

Disadvantages:

Existing system has the following drawbacks:

- Mostly WMS are standalone application.
- Due to standalone application, Vendor or supplier or end customer not able to check stock information in warehouse.
- High maintains (Maintains of own server).

- Not able to manage multiple warehouses.
- Internal Transfer between two warehouses not possible.

3. PROPOSED WORK

- Provide timely customer service
- Keep track of items so they can be found readily & correctly.
- Minimize the total physical effort & thus the cost of moving goods into & out of storage.
- Provide communication links with customers and suppliers.
- For security of password stored in database MD5 algorithm will be used as

4. METHODS

- Quality Check (QC):
 1. Quality check against GRN
 2. Maintain Good and Damage Products quantity
 3. Maintain QC Details with timestamp and identification of operation that performed it.
- Inward process:
 1. Inward all QC stock in system by using barcode scanning
 2. Maintain Inward Process Details with timestamp and identification of operation that performed it.
- Put-away:
 1. Identified product by barcode scan
 2. Identified product location
 3. Move Products to particular zone
 4. Update records
- Purchase order management:
 1. Order management
 2. Generate purchase order against order
 3. Invoice generation
- Report analysis:

Architectural Diagram:

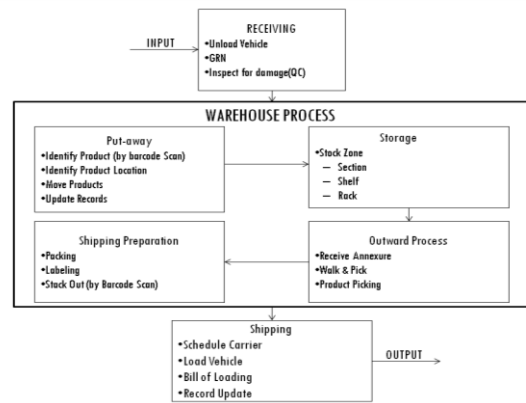


Fig1.1: Proposed Architecture

5. CONCLUSION

The survey paper discusses about the cloud computing and its industrial use. The cloud based service that is known as Software as Service; which will provide the cloud based application of Warehouse Management System. It will manage all the process on server side i.e. cloud rather than managing at client side. All the manual and papered work will be converted to software based work; so there is no need to maintain database at client side. It will overall boost the warehouse work by making it easily accessible and fast.

Future Work:

It can be made more efficient by making dynamic storage allocation as per the data. It can also be made Tab based where all the operations can be managed from a single Tablet. Efficient concurrency control to be achieved.

6. REFERENCES

[1]SANTOSH KUMAR and R. H. GOUDAR: Cloud Computing – Research Issues, Challenges, Architecture, Platforms and Applications: A Survey. International Journal of Future Computer and Communication, Vol. 1, No. 4, December 2012

[2]RAJKUMAR BUYYA, SURAJ PANDEY and CHRISTIAN VECCHIOLA: Cloudbus Toolkit for Market-Oriented Cloud Computing. Department of Computer Science and Software Engineering The University of Melbourne, Australia.

[3]M. M. Alabbadi, “Cloud Computing for Education and Learning,” 2011 14th International Conference on Interactive Collaborative Learning (ICL), pp. 589 – 594, DOI=21-23 Sept. 2011.

[4]Vijay Kumar, International Journal of Computer Science and Mobile Computing, Vol.5 Issue.9, September- 2016