

# Comparative study of various tools of On-Premises ERP and Cloud based ERP

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## Abstract:

Enterprise Resource Planning (ERP) system is one of the most important systems that various organizations implement. An ERP system helps to shape and redefine businesses in the management of vital parts of its core business. Every organization requires certain tools and technologies to run their businesses. These tool and technologies play a vital a vital role in the growth of individual organization. ERP tools or software help companies plan, account, and run key business functions under one roof. Thus, ERP tools are essential for many companies to run smoothly. in this paper, described comparative study of various ERP tools. Thereason of this paper is to perform comparative study of various ERP software tools. It helps organizations choose the right type of ERP tool that an organization can implement to improve their performance and reach their goal.

## 1. INTRODUCTION:

Enterprise resource planning (ERP) systems have become one of the most well-known information systems used by organizations in the last few years. There had been a subsequent increase in the usage of ERP tools by different organizations, the main reason why organizations are switching to ERP is to reduce the cost, efficiency, speed and facilitate the real-time decision-making System [1]. ERP systems are benefiting not only large but smaller and medium-sized organizations too and that's why we are seeing huge growth in demand in ERP software. ERP software tools allow teams to consolidate their modules like client management, management, inventory, supply chain, etc into a single unified system [2]. This Research paper will focus on studying the comparison of various ERP tools, specifically cloud and traditional ERP.

ERP systems have various properties and features that distinguish them from the various software used in filds, ERP Systems should possess all the characteristics despite manufacturer and vendor. One of the most important features that make an ERP stand different from other systems is its integration of different modules. ERP system is a set of sale recycling systems that integrate to perform various conditioning and tasks of the association. It also enables the combination of the deals between the information and business processes within colorful departments in the association. It also provides a Dynamic responding method[3].

ERP system module uses a common database that's streamlined in real-time; for illustration, applying real-time in the supplies provides help to manage the supplies by the capability to save any change in cost and amounts directly, and makes the applicable decision depending on these changes. trust ability, the liability of crimes is extremely little or nearly absent, and if they be, the most reasons are crimes in programming or faults within the perpetration of the ERP system. The ERP system consists of various modules. The associations may use these modules grounded on the kind of their work. The regular ERP comprises modules such as marketing and sales, financial management and accounting, human resources, QMS, manufacturing and data warehouse [3].

Figure 1 shows the overview of ERP Module integration. The standard ERP system comprises of the following modules:

**Marketing and Sales** - It sets its emphasis on simplifying the sales process of an organization and contains information about pre-sales and post-sales activities like quotation, drafting, accepting sales orders, dispatch of material, tracking pending sales orders and more.

**Financial Management and Accounting** - It is responsible for handling incoming and outgoing of cash of an organization. It tracks and manages all account related transactions, fixed assets, work centre, general ledger etc.

**Plant maintenance** - Plant maintenance module concerns about the delivery of quality products and at a good cost to the right customer. This module helps in making the HR management process simpler and swift while improving the efficiency. It contains incentives, rewards for the employees, training, appraisals etc.

**Quality Management** -- It contains various quality control methods like planning, examination, control, support procurement, product verification, and problem processing.

**Manufacturing-** It contains the price of material, scheduling cost operation, quality control, and manufacturing inflow.

**Data warehouse** - It is a computer program which is used to extract data from different sources, cleanse it and align it so that it can be used for making business decisions.



Figure1: An Overview of ERP Module Integration

Some of the most important characteristics of the ERP system are listed below:

- One of the most important features that make ERP stand different from other systems is integration. it also works with the transaction processing system of various types of organizations.
- ERP works with a combination of different transactions in an organization.
- Dynamic responding is a very important part of the ERP system. it works by modification or changes of the information on the database.
- ERP system module uses a common database that's streamlined in real me; for illustration, applying real-me in the supplies provides help to manage the supplies by the capability to save any change in cost and amounts directly, and make the applicable decision dependent on these changes( 5,6).
- Reliability:- The possibility of crimes is veritably little or nearly absent, and if they are, the main reasons are crimes in programming or faults in the perpetration of the ERP system.

Selecting best ERP tool for the deployment is the leading challenge in the field of research. The rest of the paper is organized as follows. The section 2 states ERP deployment types. In section 3, we discussed comparison between on-premise ERP and cloud based ERP. In section 4, we proposed Comparison between various ERP based tools. The section 5, we presented the disadvantages of On- Premise ERP

Systems. The benefits of pall- grounded ERP systems are presented in Section 6. In section 7, we state the conclusion and eventually, references of the paper.

## 2. ERP DEPLOYMENT TYPES:

ERP provides deployment strategies/solutions to the organization where they can manage store and analyze their data easily. There are two main types of the ERP system namely on-premise ERP and cloud based ERP.

### 2.1 On-Premise ERP

A type of ERP system handed as a product bought by customers needs time to be enforced because it needs to install tackle and special software in the client position the data and operation are under the control of the client. numerous associations and companies, similar as banking, insurance companies, healthcare centers, colleges, manufacturers are all using an ERP System for performing business processes, speed penetration to request, and bettered service delivery. Some of the important merchandisers of ERP systems are SAP and Oracle( 14).

#### 2.1.1 SAP System:

It's been further than 35 times since SAP which stands for systems, operations, and products in data processing have been dealing manufacturing software. originally, SAP was introduced in an R/ 3 system in 1993.it is very important company in which development and design of the ERP system. as it was the first three- league system( 14).

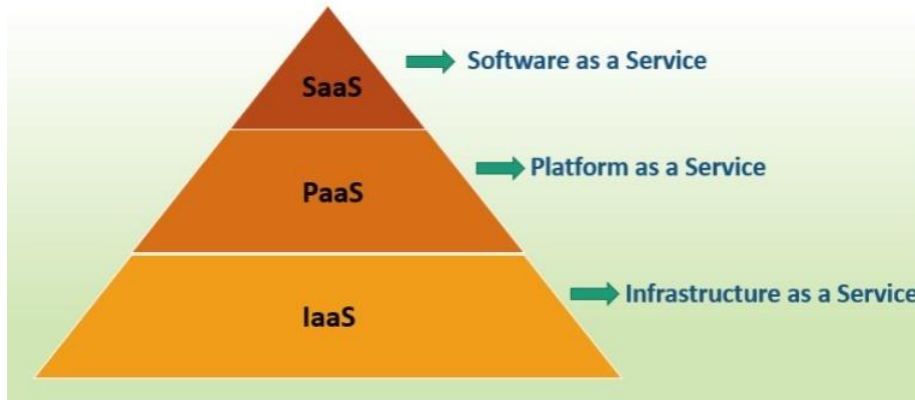
#### 2.1.2 Oracle:

The most common On-Premise ERP system developed by oracle is E-business Suite also known as EBS. This system is a total solution for ERP. EBS is a collection of modules that are integrated into a single unit. EBS was launched in the year 1987 and existed in the market with the same name till the year 1997.

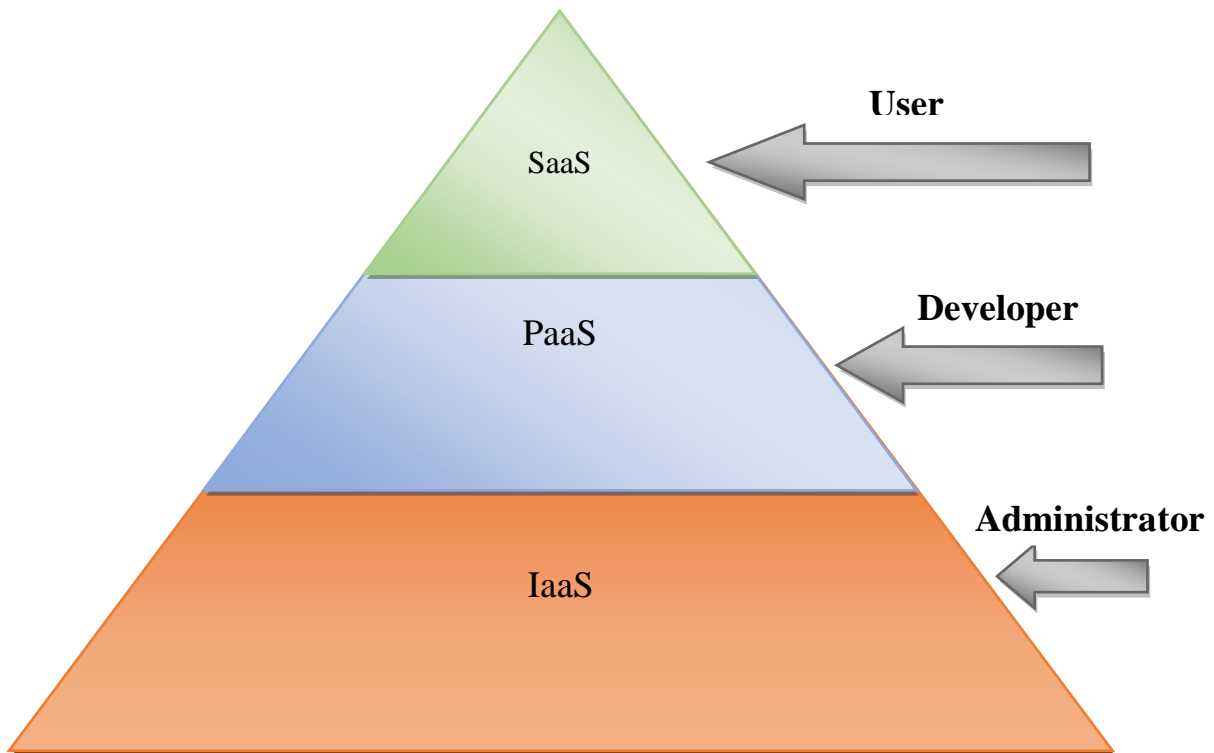
### 2.2 CLOUD ERP

Cloud ERP is a type of ERP system that requires no hardware, no special software to be installed on the user's device. Therefore it is quick to implement and is provided as a service to the user. It does not require a particular device or customer location as it can be accessed through the

### Cloud Service Models



internet. In this, the data and application are under the control of the service provider. Before the further discussion of the cloud ERP system, we first need to explore the different models of the Cloud [NN]. Figure 2 represents the cloud service model.



There are three main deployment models of Cloud are Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). The detail descriptions of these models are as follows:

#### 2.2.1 IaaS:

It is also called Hardware as a Service. Using this customer can outsource their IT resources like network, storage, processing, and virtual Machines. Unlike traditional hosting services, the resources are accessed over the internet using the pay-as-per-use model where users have to pay only for the services they used [18]. Here, the responsibility to deal with cloud infrastructure is not handled by the client but the service provider. Some of the IaaS providers are Amazon Web Services, Tata Communications, and Reliance Communication.

### 2.2.2 PaaS

PaaS is a mechanism for mixing infrastructure (server, storage, and networking) and platform (middleware, development tools) to support web applications. Basically, it provides run time environment where user can build, run, test and deploy their application if they have internet connection and system. In which used a particular programming language. It is helped customize infrastructure support application system. Some of the PaaS providers are: Google App Engine, Windows Azure, and Cloud Foundry from VMWare [18].

### 2.2.3 Software as a Service(SaaS):

SaaS is also known as "On- Demand Software". It provides software and operations ready to use that meet the requirements of specific business functions and processes. The Cloud service providers have total control and manage the software, operations, and calculating structure. The SaaS model provides the capability of using operations created by the Cloud provider. The operations can be penetrated from different customer computers through the Internet by using the web surface interface. Some of the SaaS providers are Google Apps, Microsoft Office 365, NetSuite etc [11,15,18].

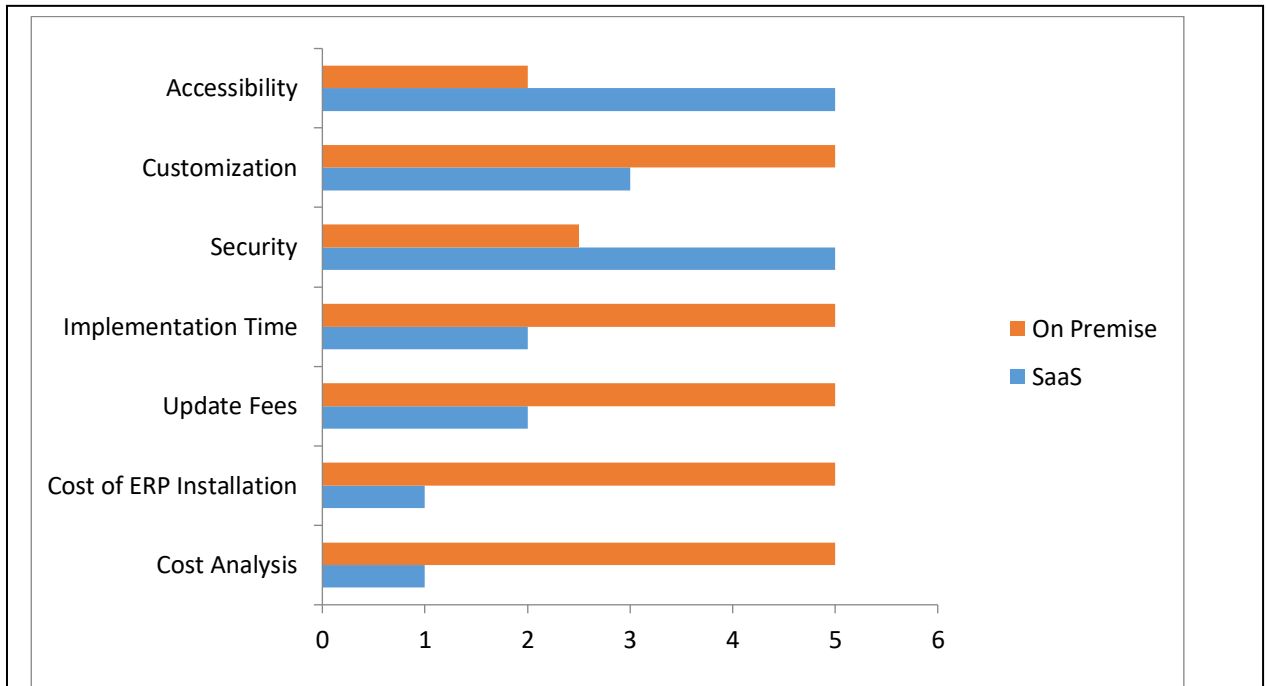
## 3. Comparison between on-premise ERP and Cloud based ERP:

Organizations can set up their own ERP implementation plan to fulfill business requirements. Basically ERP implementation can be done through two types of techniques namely on-premise ERP and Cloud based ERP. User can select any type of ERP according to business need. There are several characteristics through which user can opt the ERP such as, cost analysis, cost of ERP installation, updates fees, implementation time, security, customization and accessibility. The comparison of on-premise and cloud based ERP software systems are shown in Table 1. Figure 3 represent the graphical comparison between Cloud based (SaaS) ERP and On Premise ERP.

Table 1: Comparison of on-premise and cloud based ERP software systems

Basis of difference	Cloud-Based ERP(SaaS)	On-Premise ERP
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Cost Analysis	Period Based Subscription. No maintenance cost (NMC).	Cost of license Maintenance cost is often annual.
Price of ERP Installation	NMC	Cost to setup and install Software.
Update Fees	Comprised in Subscription Fees.	Requires additional Cost for updating hardware.
Implementation Time	Requires less time for its setup.	A lot of time is required for setting up.
Security	Data security is the vendor's duty.	Data security is the user's duty.
Customization	Offers stability and continuous updates from the vendor, but doesn't offer much customization.	Vast customization options are available.
Accessibility	Can be accessed from anywhere.	Can only be Accessed where ERP servers are located.



**Figure 3: Comparison between Cloud based (SaaS) ERP and On Premise ERP in graphical form**

**Comparison between various ERP tools:**

There are several Cloud based ERP tools are there and individual tool has have its own characteristics which is differentiate it from other tools. The various tool of Cloud based ERP are QAD, SAP, NetSuite, Genius Software, Free Fire, Fresh Books, Sage 500, Accounting Seed, inforVisual,Tally, Epicor ERP, DELTEK. And E2 Manufacturing [7,8,9,10]. Although there are many other tools are also there but the mentioned tools are the most popular and frequently useable tools. Table 2 shows the comparison between these popular Cloud based ERP tools.

Table 2: Popular Cloud-Based ERP tools

Tools	General Information	Support	Company Size	Available Devices	Clients	Features
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<p><b>QAD</b></p>	<p>It is designed for various manufacturing industries. Also it is fully integrated and scalable ERP platform.</p>	<p>Email Phone Live Support Training Tickets</p>	<p>Medium Enterprises</p>	<p>Windows Linux Android IPhone/iPad Mac Web-Based</p>	<p>Lear corporation, Sharp packaging services, Amcor</p>	<p>CRM, Financial supervision, Compliance supervision,, Document executive . Forecasting, Analytics and Reporting, Manufacturing product.</p>
<p><b>SAP</b></p>	<p>It is built primarily for giant businesses in different industries, is a powerful and intelligent on premise ERP software.</p>	<p>Email Phone Live Support Tickets</p>	<p>Small, large and medium enterprises</p>	<p>Windows Linux Android IPhone/iPad Mac</p>	<p>Mclauren group, Trigon LLC, Umasons</p>	<p>this is solve payment ,products ,order request service ,core finance etc.</p>
<p><b>Net Suite</b></p>	<p>A scalable cloud ERP solution which is for growing medium size businesses and large enterprises. It involves different modules.</p>	<p>Email Phone Training Tickets</p>	<p>Small, large and medium enterprises</p>	<p>Windows Android IPhone/iPad Mac Web-Based</p>	<p>Xerox, Siemens , Cisco</p>	<p>this is solve payment ,products ,order request service ,Fraud Prevention etc.</p>

<b>Genius Software</b>	Genius is comprehensive financial software belonging to SAG InfoTech with six different modules.	Email Phone Live Support Training Tickets	Small, large and medium enterprises	Windows	Fortis, Capital Local Area Bank, Railtel.	this is solve Client Manager, A/c S/w, various types of Income Tax , Monitoring & Analysis, form Filing etc.
<b>Free File</b>	IRS Free is provide a reliable various tax training and filing documents.	Phone Live support	Small and Medium enterprises	Windows Mac Web-Based	NA	Fill various types of Forms,Free File Alliance, Customer support, Basic calculation etc.
<b>Fresh Books</b>	A winner of 2019 Best Accounting Software Award. its provides cloud accounting apps.	Tickets	Small Business, Large Enterprises	Windows Android IPhone/IPad Mac Web-Based	InfluAds, Mimic Email, Phone Live Support	Customizing invoice Tracking, Invoice Views, Quick discounts, Estimates ,Online Payments
<b>Sage 500</b>	it provides a enterprise management solution techniques.	Email Phone Live Support Training	Small Business , Large Enterprises, Medium Business	Windows	Harmar Plastic Manufacturing, Nashville Wire Products, SkyGolf, Christian Broadcasting Network, Power Curbers.	Active planner, Fixed assets, Sales Tax by Avatara, Credit Card processing, Sage HRMS, Payroll Sage HRMS

<b>Accounting Seed</b>	An online accounting platform that is natively built on Sales force and is designed to accelerate and simplify up all back-office accounting processes.	Email Phone Training Tickets	Small Business, Medium Business	Web-Based	Real Thread, Borrego Solar, World Venture	Paymentsstamens ,Revenue reports, Vendors, various types of Reports, Multi-Company- Currency.
<b>Infor Visual</b>	Fully incorporated and scalable ERP platform designed for various manufacturing industries.	Email Phone Live Support Training Tickets	Large Enterprises, Medium Business	Windows Android Mac Web- Based	CERN, Scandinavian Airlines System, State of Utah	Configuration Management, Supply Chain Management etc.
<b>Tally</b>	It is a powerful product that helps revolutionizing the way business runs.	Email Phone Live Support Training	Small Business	Web-Based	Bharat Goenka	Resource Planning Software Domain
<b>Epicor ERP</b>	This system is reliable and scalable for ERP software solutions. It provides robust functionalities to maximize revenue profits.	Email Phone Live Support Training Tickets	Large Enterprises, Medium Business	Windows Linux Android IPhone/IPad Mac Web- Based	Heckmann Corporation, Scottish Public Pensions, Agency (SPPA), Suncast Corporation	CRM, Performance Management, Enterprise Content Management, Planning and Scheduling, Risk and Compliance, Epicor ICE, Business Architecture

<b>DELTEK</b>	it provides Deltekcostpoint methods that help businesses' operations.	Email Phone	it solves problems small-Medium-large businesses.	Windows Android IPhone/IPad Mac Web-Based	Unisys, HighPoint, LogiCore	Enterprise reporting, Dashboards Analytics, Automation Compliance, Subcontractor management, , Payroll Procurement etc.
<b>E2 Manufacturing</b>	An all-inclusive, modular ERP System designed for manufacturers that meet to order demands.	Email Phone Training	Small Business, Large Enterprises, Medium Business	Windows Mac Web-Based	Avenger, Inc., Kehr-Buffalo, WorkForce Development Center	Inventory Tracking, Purchase Orders, , Data Collection, Quality Assessment Job Costing, Job Tracking etc.

#### 4. Disadvantages of On-Premise ERP Systems:

Each ERP has its own characteristics that can be used according to the needs of users. In spite of huge amount of advantages, there are also certain disadvantages with on-premise ERP over cloud base ERP [16, 17]. The disadvantages of On-Premise ERP system are as follows:

- They are complex and expensive. They are costly undertaking.
- They typically require consultants to implement according to companies specific requirements.
- They have high maintenance costs in terms of software provider.
- They are hard in terms of deployment of updates and upgrades.
- They are less accessible.
- The cost-of-ownership is likely to be higher.
- It becomes difficult for small manufacturers to hire those with skills of setup.

#### 5. Benefits of Cloud-Based ERP systems:

There are numerous benefits associated with implementing ERP systems. Since the traditional on-site ERP system often prove too rigid to keep up with the growing technology, many large organizations have shifted towards cloud-based systems which offer advantages like flexibility, scalability, and ease to keep pace with innovation. Here are some advantages of implementing cloud-based ERP systems [11,12].

- Since cloud systems support thousands of concurrent druggies on participated structure, they can match garçon capacity to ongoing demand and use waiters more efficiently — therefore saving energy.
- Cloud ERP system empowers an association to integrate across their entire capacity where everyone can pierce secure, up- to- date information so that they can unite better, make opinions more confidently, and ameliorate effectiveness.
- With cloud- grounded systems, an association can cut on functional charges similar as the cost of electricity, cooling systems, backup systems, and remote-access technologies which an ERP on- premise system can add up presto( 13,14).
- These cloud-based ERP tools are more user-friendly and cost-effective as they manage updates and system administration as part of cloud subscriptions.
- Cloud-based systems provide comprehensive and end-to-end security with minimum disruptions.
- These systems provide easier and transparent up-gradation.

Cloud systems give a centralized database and harmonious and real-time information for all the departments in an association and help in easy access of data for the remote staff or global workforces. That's the reason ERP software is favorite for all companies In malignancy of these bandied advantages, Cloud grounded ERP system also have certain disadvantages. As in Cloud grounded ERP, the security is the main concern of any pall grounded ERP deployment (19) Migrating ERP coffers to a pall virtualized terrain has little or no effect on utmost of the vulnerabilities and pitfalls of coffers. For case, if a service has essential vulnerabilities and that service is displaced from anon-virtualized garçon to a virtualized garçon, the service is still vulnerable to victimization. nonetheless, the operation of virtualization can help to avoid similar exploitation, but virtualization can also give fresh attack vectors ( 20).With these possible security benefits of virtualization, it also faces various issues and challenges on different levels of virtualization such as, file sharing between hosts and guests, up-to-date snapshots, network storage, hypervisors, virtual machines, and separation of duties and administrator access[20,21].

## 6. CONCLUSION:

This paper focused on the study of ERP systems along with their characteristics, modules, and their major types similar to Cloud ERP and On-premise ERP, which leads to the ensuing recommendations. As ERP systems are used for business, we have a lot of choices. Due to the bombardment of so many options users often get confused as to choose which system. One of the most important decisions they will need to make is whether to select a cloud-based ERP solution or one that's installed locally i.e. On-premise ERP system. All the companies are it small or medium private organization faces the need to change the ERP systems they are using from time to time. This process is done very frequently as they do not want to maintain a large IT room with a large number of IT resources but to use cloud services which reduces the cost of maintenance and is easy to adapt.

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