

# TCO & Benefit analysis

In premise Email Archival setup  
v/s a Fully managed cloud  
Email Archival setup (saas)

*Document Ver: 2.0*

*Published: 22nd April 2018*

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### Goals

The goals of the proposed email archival setup, so that the two architectures, in premise and cloud, are designed to deliver on these goals.

<b>Number of users</b>	Architecture sizing supports a user base in this range	Quantity	1000
<b>Uptime required</b>	System should be extremely reliable (RTO=near zero)	%	99.9
<b>Data Durability</b>	Data should be safe, secure and extremely durable (RPO=0)	%	100
<b>Retention of email</b>	System should retain all mail for a period of 7 years	years	7

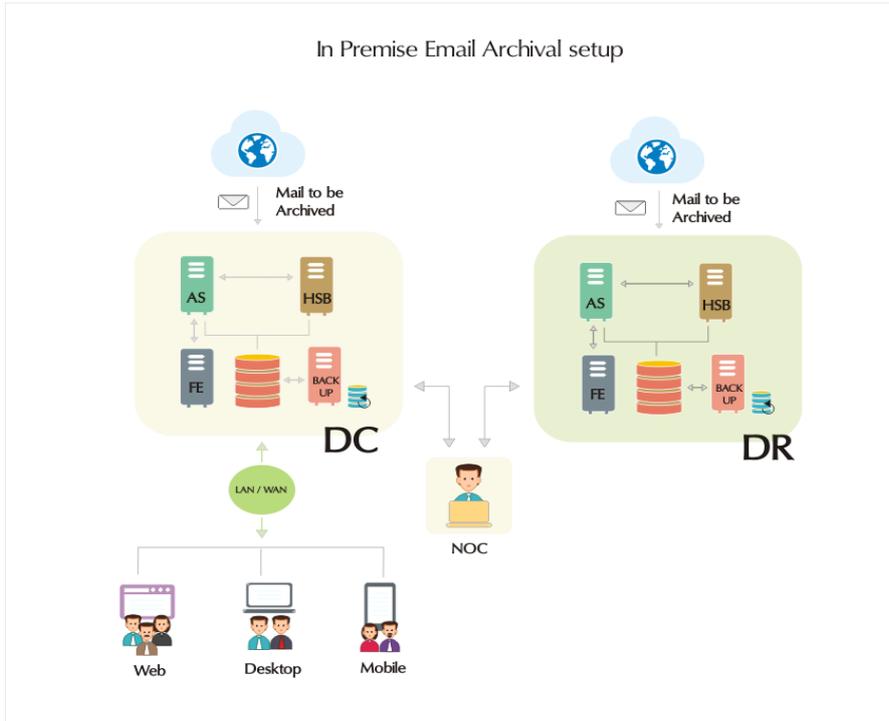
### Basic Assumptions

For the sake of computing in premise equipment cost, the following assumptions have been made. These are inline with Industry standards

<b>Average Annual mail growth per user</b>	A single business user will grow send and receive this volume of email in one year (and this will keep growing)	GB	4
<b>Size of Storage (total)</b>	Number of users * Average annual growth per user * Retention period	TB	27

### In Premise Architecture and Total Cost of Ownership

The image below represents an ideal in premise architecture to come close to achieving the goals of the setup. The table below the image represents the total annual cost of running a setup of this architecture.

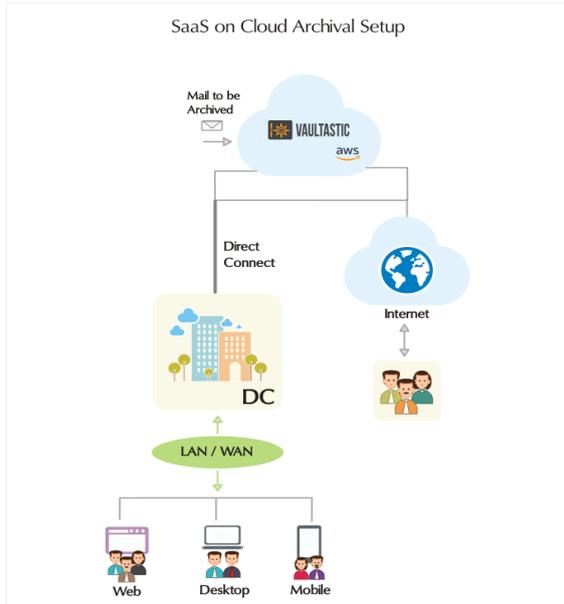


Site	Component	Annual recurring cost (opex) USD	Description
Primary Site Infrastructure	1 Mail Archiving server	238500	Active mail server receiving and storing mail.
	1 redundant mail Archiving server (Passive Hot standby)	238500	To cluster the mail server for redundancy to handle local mail server failures
	1 Front End Server	190800	Users access the services via this server
	SAN Storage volume (68TB)	75649	Mails are stored on this
	Backup system	198000	Periodic backups to secondary medium
	Data center costs	210000	Running cost per year to host the equipment
	Bandwidth costs	350000	Cost of b/w for mail flow and mail access
DR site Infrastructure	1 Mail server	238500	Active mail server receiving and storing mail.
	1 Front End Server	238500	Users access the services via this server
	SAN Storage volume (68TB)	75649	Mails are stored on this
	Data center costs	210000	Running cost per year to host the equipment
Services	Bandwidth costs	350000	Cost of b/w to replicate data continuously
	24/7 NOC to monitor Primary and DR site	1890000	NOC team to ensure uptime
Software Costs	L1 helpdesk Team	945000	Team to provision users, set policies, study reports etc
	Digital eyes and ears (monitoring)	52500	Automated monitoring for resources at both DCs
	Operating System for 5 servers across both sites	279650	Subscription for Red Hat Linux OS for 2 Mail servers, 2 redundant mail servers, 1 front end server
	Any suitable archiving software	525000	Subscription for any suitable email archiving software which provides comparable features
<b>TOTAL</b>		<b>6306248</b>	
<b>Effective per user per year rate</b>		<b>6306</b>	

Note: To get to the working of each of the above costs, please refer to the Annexure at the end of this document.

### SaaS on cloud Architecture and Total Cost of Ownership

The image below represents a cloud based SaaS solution architecture which achieves the goals and delivers strong benefits beyond that too. The table below the image represents the total annual cost of running a setup of this architecture.



Site	Component	Annual recurring cost (opex) USD	Description
Infrastructure	Bandwidth costs (8-10 MBPS)	525000	Cost of b/w for mail access
Services	L1 Helpdesk team	945000	Team to provision users, set policies, study reports etc
SaaS	Vaultastic Tracer SaaS cloud service	1170000	Subscription to Vaultastic's Tracer plan
	<b>TOTAL</b>	<b>2640000</b>	
	<b>Effective per user per year rate</b>	<b>2640</b>	

Note: To get to the working of each of the above costs, please refer to the Annexure at the end of this document.

## The Cost Comparison

The table below suggests your cost areas while running an email archival setup. Observe that for a cloud setup all the factors are included as part of the service offering and also guaranteed.

	In Premise Email Archival Setup	Cloud Email Archival Setup
Effective per user per year cost	<b>6306</b>	<b>2640</b>
Cost Model	Capex + Opex	Opex
Infrastructure	At your cost, which varies with your goals	All inclusive and fully managed, rate fixed at whatever your size of deployment
Reliability/ Availability	At your cost - A MASSIVE DESIGN EFFORT, which must consider DATA SAFETY, UPTIME, DATA DURABILITY, and DISASTER RECOVERY site	All inclusive - GUARANTEE of 99.9% UPTIME & DATA DURABILITY of 99.999999999%, and DR INCLUDED
Security	At your cost - SECURITY NEEDS SPECIAL EFFORT to consider PHYSICAL SECURITY, DATA SECURITY, EMAIL SECURITY, NETWORK SECURITY, and ongoing maintenance	ALL INCLUDED WITH THE SERVICE. All you have to do is configure your email usage policies
Scalability	At your cost - A CHALLENGE when considering UPGRADING, SCALING, via long purchase and deployment cycles	INCLUDED WITH THE SERVICE. WE GROW WITH YOU

## The Benefit Comparison

The table below shows that besides being lower cost, how a cloud email service offers a plethora of benefits, which future proof your investments and are totally de-risked from lock in contracts, aging assets, management issues, etc

		In Premise Email Archiving Setup	Cloud Email Archiving Setup
Delivery Model	Responsibility	<b>You deploy and maintain the infra and application using your internal resources</b>	<b>Fully managed, SLA backed service, ready for you to simply consume.</b>
	On-boarding	Procure equipment, deploy, test, optimize, manage and maintain all of which can take a long time to get started	Get started immediately. Provision your setup in less than a day and you can start consuming.
Infrastructure	Responsibility	<b>YOU PROCURE, PROVISION and MAINTAIN</b>	<b>ALL INCLUDED WITH THE SERVICE. ZERO INFRA, ZERO MANAGEMENT, ZERO MAINTENANCE AT YOUR END</b>
	Data center	Not feasible (and also not your business goal) to invest in converting your DC to tier 4 level reliability, getting certified at multiple levels, building in power and cooling redundancies, and more.	AWS Cloud DC is carrier grade, multi region, with multiple certifications, built in redundancies and multiple physical Availability zones in one region. Certified from ISO, CMM, CERT etc for various parameters and compliance
	Provisioning	*Needs upfront provisioning even for future workloads. Can get wasted if there is a downsize.	* No upfront provisioning required * Simple monthly billing as per consumption = pay as you go, pay per use, grow/shrink anytime. * No fixed contracts, cancel anytime with no liability.
	Technology refresh	*Fixed, static technology for a period of 5 years *During a refresh, these become dead assets. *No easy upgrade without risk or major downtime	*Infra automatically renewed/updated by cloud provider ensuring that our solution is always on a high performance & latest platform
	Scalability	* Scaling is not easy due to long procurement cycles * Scaling often requires a rearchitecture, leading to downtimes, risk of data loss and drop in productivity.	*Allows us scale up/down/out with ease at the click of a button *Elastic infinite cloud storage, means no upfront provisioning and no projected need. Scales on demand
Reliability/ Availability	Responsibility	<b>A MASSIVE DESIGN EFFORT FOR YOU</b>	<b>GUARANTEE of 99.9% UPTIME &amp; DATA DURABILITY of 99.99999999%, and DR INCLUDED WITH THE SERVICE</b>
	Uptime	*Reliability and Redundancy has to be built into the infrastructure and application by careful planning, provisioning of extra resources and automated or manual processes	*Infrastructure guaranteed at 99.9% uptime by AWS. *Application designed with redundancy, auto scale, hierarchical storage and more to deliver on uptime promise
	Data Safety and Durability	*Data Durability goal needs redundancy in storage, strong frequent backups, and sync to DR Site. * Needs a separate backup system copy critical data periodically from the mail server. Reliability of this system also has to be factored in, leading to higher costs And yet, this can almost NEVER achieve an RPO of zero.	*Cloud storage provides a data durability of 99.99999999% allowing the solution to provide an RPO of zero *Thanks to extreme data durability offered by cloud storage, backup of the data is built into the architecture
	Monitoring and NOC	You need to deploy automation tools to monitor service and infrastructure uptime and also provision a 24/7 team to work in shifts to monitor and maintain the setup.	Mithi uses a combination of digital eyes and ears along SOPs, and a well trained 24/7 NOC maintain uptime.
	Disaster recovery	*DR site has to be provisioned to achieve goals of 99.9% uptime	*DR built into the architecture. By over provisioning using the availability zones for our infrastructure, helps us deliver on our guaranteed promise of 99.9% application uptime.
Security	Responsibility	<b>Thanks to mounting cyber security attacks/threats, SECURITY NEEDS SPECIAL EFFORT BY YOU</b>	<b>ALL INCLUDED WITH THE SERVICE. All you have to do is configure your email usage policies</b>
	Infrastructure security	*Physical security of the infrastructure has to be planned, built in and monitored.	* Infrastructure secured by cloud provider to ensure privacy and safety of the resources
	Data Security	*Data has to be stored encrypted with controlled limited access. You need to design this into your info sec working.	* Encryption of data, access control, mail usage policy control built into the infrastructure.
	Email Security	*A gateway mail solution (scrubbing) has to be deployed	* Integrated high performance guaranteed Mail scrubbing service (in partnership with Trend Micro HES) to detect malware.
	Network Security	* Have to design and build in WAFs, Intrusion detection systems, Attack mitigation systems, TLS, etc	* Resources secured at multiple layers with IAM, authentication, VPCs, WAFs, Firewalls, TLS and more
	Data Ownership	* Data is captive within your own physical environment	* Even though the data is stored on the cloud, the data is entirely yours and you can take the data whenever you want using multiple ways to download the data. We don't own or control your data.
Ongoing Infra security	* Regular VAPT and other analysis needs to be done to ensure hygiene	* Part of the IaaS	
Scalability	Responsibility	<b>A CHALLENGE FOR YOU</b>	<b>INCLUDED WITH THE SERVICE. WE GROW WITH YOU</b>
	Scale up/out	Upgrading or scaling out the hardware, need to go through the long purchase cycles since they are capex.	At the push of a button, we can provision larger instances, more storage and scale geographies.
Application Refresh	Responsibility	<b>AN OPERATIONS CHALLENGE FOR YOU</b>	<b>INCLUDED AND AUTOMATIC WITH THE SERVICE</b>
	Updates/Upgrades	Upgrade deployments are typically delayed to avoid downtimes and stay away from change, leading to the customer using older versions and losing out on the benefit of the newer versions.	Continuously upgraded to ensure that the customer is always using the latest capabilities

## Conclusion

A cloud Solution delivers on the solution goals, while being 3/4th the price of a comparable in-premise solution. In addition, it also delivers multiple other benefits of security, scalability, upgradability, etc, which make it a compelling value proposition.

## Annexure

This page shows the working for the costs of each element used to build the architecture.

<b>Number of users</b>	Architecture sizing supports a user base in this range	Quantity	1000
<b>AMC</b>	Maintenance price per year as a percentage of original price	%	20
<b>Life of equipment</b>	Period after which, equipment needs refresh	years	5
<b>USD Rate</b>	Rate per USD as on Dec 2018	INR	70
<b>Currency choice</b>	Change this for the sheet to show all figures in the right currency	string	INR
<b>Bandwidth</b>	Per MBPS	1 MBPS	70000
<b>Cost of SATA per TB</b>	Our research suggests that this is the price of SATA per TB	INR	6090

## Components of an In premise Setup

The below mentioned components can be used to build an in premise architecture. The last column represents the annual cost of the component, mapped to an opex model.

Components	Description	Currency	Year 1 (Capex)	Year 2 (AMC/Subsc)	Year 3 (AMC/Subsc)	Year 4 (AMC/Subsc)	Year 5 (AMC/Subsc)	Year 6 (Capex)	Year 7 (AMC/Subsc)	Ave Annual (Opex)
<b>Mail Server</b>	Purchase price	INR	525000	105000	105000	105000	105000	603750	120750	238500
<b>Front End Server</b>	Purchase price	INR	420000	84000	84000	84000	84000	483000	96600	190800
<b>SATA Storage on a SAN</b>	Need 68TB of live store. Purchase price 87 USD per TB	INR	166523	33305	33305	33305	33305	191502	38300	75649
<b>Backup</b>	Tape system and software, purchase price	INR	630000	126000	126000	126000	126000	126000	126000	198000
<b>Data center</b>	Cost of hosting the equipment, cooling, power, security etc.	INR	210000	210000	210000	210000	210000	210000	210000	210000
<b>Digital Monitoring</b>	Cost of tools to monitor the equipment 24/7 using automation	INR	52500	52500	52500	52500	52500	52500	52500	52500
<b>Access Bandwidth</b>	Cost of Internet bandwidth consumption, for access to the in premise servers for roaming users. This is approximately 5 mbps across all devices and locations with average assumptions of consumption patterns (peak hours etc)	INR	350000	350000	350000	350000	350000	350000	350000	350000
<b>Replication Bandwidth</b>	Cost of Internet bandwidth to replicate data from Primary site to DR Site. Assuming a 5 MBPS dedicated pipe.	INR	350000	350000	350000	350000	350000	350000	350000	350000
<b>NOC team 24/7</b>	2 people working 3 shifts over 24/7. Assumes a cost of 375 USD per person a month including salary and overheads	INR	1890000	1890000	1890000	1890000	1890000	1890000	1890000	1890000
<b>Day administrator</b>	1 person working 2 shifts over 12 hours. Assumes a cost of 375 USD per person per month including salary and overheads	INR	945000	945000	945000	945000	945000	945000	945000	945000
<b>Any Archiving software</b>	Cost of licensing the mail solution software to be deployed on the servers. Have assumed Mith's Connect Xf software, whose price has been taken as 7.5 USD a user a year.	INR	525000	525000	525000	525000	525000	525000	525000	525000
<b>Operating System</b>	Cost of licensing the Red Hat Linux operating system software with support to be deployed on the servers. Price per server.	INR	55930	55930	55930	55930	55930	55930	55930	55930

## Components of a SaaS Cloud setup

The below mentioned components are required to consume a SaaS cloud email service. The last column represents the annual cost of the component, mapped to an opex model.

<b>Vaultastic cloud archiving</b>	Cost of licensing the mail solution software to be deployed on the servers. Have assumed Mith's Connect Xf software, whose price has been taken as 24 USD a user a year.	INR	1170000	1170000	1170000	1170000	1170000	1170000	1170000	1170000
<b>SaaS subscription</b>	1 person working 2 shifts over 12 hours. Assumes a cost of 375 USD per person per month including salary and overheads	INR	945000	945000	945000	945000	945000	945000	945000	945000
<b>Day administrator</b>	Cost of Internet bandwidth consumption, for access to the in premise servers for roaming users. This is approximately 8-10 mbps across all devices and locations with average assumptions of consumption patterns (peak hours etc)	INR	525000	525000	525000	525000	525000	525000	525000	525000

Note: The above prices have been derived via online research, our own pricing tables and our experience of the industry. We believe that even if you do detect a variation, it may not be drastic. Hence for the sake of comparison built out in this document, we