

Components of Total Cost of Ownership

For those considering Cloud Computing and Software as a Service



Management Summary

In any computing project it's important to perform a full analysis of all the costs and benefits before making decisions to begin a project, migrate a system or make a purchase.

Since the emergence of the intersection between Cloud Computing and Software as a Service, many organizations are evaluating one or both of these models for reduction in cost and increase in simplicity of their environment.

This whitepaper applies a model pioneered by The Yankee Group for making these calculations, and applies it to the decisions around tools in the software factory.

Cost Components

In her landmark research document, *Understanding the Total Cost of Ownership of a Hosted vs. Premises-Based CRM Solution*, Yankee Group researcher Sheryl Kingstone laid out a series of components that should be considered as part of any TCO analysis of cloud vs. on premises hosting of a workload.

Software

In the traditional model, you buy a license to the current release of the software you desire, and you own the right to use that version, and only that version, indefinitely. This is sometimes called "perpetual" licensing. Upgrades and updates to the software are usually included in a separate category called "maintenance", as is ongoing support for the product beyond an initial period.

In the Software as a Service model, licenses are procured as needed, usually for a period of time, like one year or one month. Generally support and "maintenance" can be included in the monthly or yearly charge.

Software Maintenance

This additional charge usually buys you the rights to upgrades and patches to the perpetual software license. Sometimes these maintenance costs include support for the software through web or phone, and sometimes they don't. Generally the cost is some percentage of the original license itself.

Hardware

The traditional model, of course, requires you to purchase or lease appropriate hardware to run the software. Often this can be multiple servers – one for a database and one for a web server, for instance. When calculating the total cost of ownership for an on-premise installation, it's appropriate to use three-year straight line depreciation charges to account for the value and the need to refresh the hardware periodically. In the Software as a Service model, these costs are usually contained within the hosting charge portion of the price.

Backup Hardware

For any critical application, it's important to have a hot-swap standby server ready to continue the work if the primary

machine is taken offline. Although in the traditional premises model this can provide a high level of confidence in the reliability of the environment, it often falls short of the dynamic redirection, replication and work shifting of a hosted Cloud environment.

Hardware Support

Most server manufacturers charge a fee to provide support, service and repairs to the hardware. Like software, this is generally a percentage of the original purchase price of the hardware itself. The cost applies to both the primary and backup servers.

Like the server, the SaaS model generally contains these support costs within the hosting charge portion of the price.

Operating System Software

There is a cost component for the operating system software and support for that OS on both the primary and backup machines. Again, in the SaaS model these costs are usually contained within the hosting component of the price.

Network

As with any server introduced into an infrastructure, there is some amount of network reconfiguration and bandwidth costs. However, if the software is intended for users outside of the organization, including mobile users connecting from disparate locations, these costs can rise substantially.

Cloud/SaaS providers incur these costs as well, but often include them in the hosting price, or provide them as a one-time “connection charge” for setup.

Backup power

Constant, regulated power is important for any server, and the standard is to provide power in an outage for a server for at least 2 hours in order to allow an orderly shutdown of the databases embedded in most applications and tools. Also, remote management cards that connect to and read the status of Uninterrupted Power Supplies are required.

Installation IT support

The standard assumed by the Yankee Group paper is about 6 weeks of professional services for a new infrastructure, weighted 50% towards the first 3 months of the life of the software itself.

Ongoing IT support

Any running installation requires constant monitoring, adjustment and repair. These tasks include applying patches, restarting services and servers, performing backups, etc. The Yankee Group suggests allowing for 8 hours per week for support of both the primary and backup machines and their software.

TCO Analysis: On Premise

For this analysis, we will compare the costs for an IBM Rational Team Concert installation sized for 50 users. However, IBM currently offers 10 free client licenses per server install, so we will reduce the clients required by 10 for this analysis.

Further assumptions include:

- Cost for license of IBM Rational Team Concert Floating Developer: \$7,400
- Cost for license of IBM Rational Team Concert Server: \$18,100
- Annual software maintenance: 25% of software cost
- Cost of server(s) for on-premise software: \$18,500 (depreciated over 3 years)
- Annual hardware maintenance cost: 12% of server cost
- Fully-burdened cost of IT resource for support: \$90,000
- Allocation of IT resource to support software/hardware infrastructure: 25%
- Allocation of IT resource to end-user support: 50%
- Cost of network infrastructure/firewall: \$1,500 initially, \$250 for maintenance and adjustment each year over life of system
- Cost of UPS: \$1,200
- Cost of operating system and server software: \$1,926 (depreciated over 3 years)
- Cost of training of users: \$15,000

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Software - Users	\$296,000	-	-	-	-	\$296,000
Software - Servers	\$18,100	-	-	-	-	\$18,100
Software Maintenance	-	\$78,525	\$78,525	\$78,525	\$78,525	\$314,100
Hardware	\$6,167	\$6,167	\$6,167	-	-	\$18,500
Backup Hardware	\$6,167	\$6,167	\$6,167	-	-	\$18,500
Hardware Support	\$1,480	\$1,480	\$1,480	\$1,480	\$1,480	\$7,400
Operating System Software	\$642	\$642	\$642	-	-	\$1,926
Network	\$1,500	\$250	\$250	\$250	\$250	\$2,500
Backup Power	\$1,200	-	-	-	-	\$1,200
Install/Config IT Support	\$11,250	-	-	-	-	\$11,250
Ongoing IT Support	\$22,500	\$22,500	\$22,500	\$22,500	\$22,500	\$112,500
End-User IT Support	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$225,000
Training	\$15,000	-	-	-	-	\$15,000
Total	\$425,005	\$160,730	\$160,730	\$147,755	\$147,755	\$1,041,976

Analysis of on-premise costs

TCO Analysis: Software-as-a-Service

For this analysis, we will again use the costs for an IBM Rational Team Concert installation sized for 50 users.

However, as is typical of most organizations, not every member of the team will “log on” simultaneously, meaning that some of the licenses of the software will be “recycled” for other users, so that only 25 “floating” licenses are included in the analysis. This is one of the major benefits of a Software as a Service model.

Since 10 of those licenses are free, it also further reduces the software costs.

Further assumptions include:

- Cost for Cloud hosting and Software-as-a-Service for licenses of IBM Rational Team Concert Floating Developer: \$559
- Cost for license of IBM Rational Team Concert Server: Included in client cost
- Annual software maintenance: Included in client cost
- Cost of server(s) for on-premise software: Included in client cost
- Annual hardware maintenance cost: Included in client cost
- Fully-burdened cost of IT resource for support: \$90,000
- Allocation of IT resource to support software/hardware infrastructure: Included in client cost
- Allocation of IT resource to end-user support: 33% (to reflect lesser cost due to lack of need to support tools installed on workstation)
- Cost of network infrastructure/firewall: Included in client cost
- Cost of UPS: Included in client cost
- Cost of operating system and server software: Included in client cost
- Cost of training of users: \$15,000

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Software - Users	\$100,620	\$100,620	\$100,620	\$100,620	\$100,620	\$503,100
Software - Servers	-	-	-	-	-	\$0
Software Maintenance	-	-	-	-	-	\$0
Hardware	-	-	-	-	-	\$0
Backup Hardware	-	-	-	-	-	\$0
Hardware Support	-	-	-	-	-	\$0
Operating System Software	-	-	-	-	-	\$0
Network	-	-	-	-	-	\$0
Backup Power	-	-	-	-	-	\$0
Install/Config IT Support	\$11,250	-	-	-	-	\$11,250
Ongoing IT Support	-	-	-	-	-	\$0
End-User IT Support	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$150,000
Training	\$15,000	-	-	-	-	\$15,000
Total	\$156,870	\$130,620	\$130,620	\$130,620	\$130,620	\$679,350

Analysis of Software as a Service costs

Summary

As is evident from the two tables, there is a significant cost savings both in the first year and over the total 5-year life of the analysis:

- Year 1: \$268,135 Savings
- Year 2: \$30,110 Savings
- Year 3: \$30,110 Savings
- Year 4: \$17,135 Savings
- Year 5: \$17,135 Savings
- **Total Savings: \$362,262**

More importantly, this analysis doesn't account for certain other intangible benefits of the Cloud/SaaS model:

- Because you provision users on-demand, you need not purchase the entire infrastructure at once. You can start small and grow as the project grows, and then reduce your costs as the project begins to conclude. This can save up to 50% more if a project follows a normal ramp-up, ramp-down curve.
- Generally a Cloud/SaaS infrastructure can be configured very quickly, sometimes instantaneously. This can be a value to fast-moving, agile projects.
- There is little to no opportunity for "shelfware" in a SaaS/Cloud infrastructure, nor is there an opportunity for being out-of-compliance with a capacity-based license agreement. There is no need to purchase licenses of software up front that might sit unused, and if additional users are needed beyond the anticipated original scope, they can generally be added with little fanfare and without penalty.

As with any TCO analysis, it's important to consider all the custom factors that govern your situation. There are likely other costs that should be considered, and ones that are non-existent in your environment. However, it's likely that the powerful mechanisms of buy-on-demand will result in significant savings, one of the many reasons driving the shift to Cloud and Software as a Service across the IT industry.

References

[Yankee]: Whitepaper, Yankee Group: Total Cost of Ownership of a Hosted vs. Premises-Based CRM Solution, Sheryl Kingstone

If you read this document, you will learn the following:

How an existing analysis comparing total cost of ownership for on-premises customer relationship management software to a cloud-hosted scenario gives a yardstick by which software development tool costs can be measured.

For more information

To learn more about Software as a Service and Cloud Computing, as well as how they can be used to significantly improve costs and speed-to-value for development tools, contact CloudOne or one of the CloudOne Consortium business partners, or visit the following Web site: **OnCloudOne.net**



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