

TOTAL COST OF OWNERSHIP FOR DESKTOPS & VDI

The cost of a desktop is more than just the device price tag.

When evaluating desktop options it's easy to get hung up on surface costs without realizing how many factors actually effect the total cost of ownership.

This guide outlines key criteria for consideration and how those factors affect TCO. TCO Worksheet included!

Total Cost of Ownership for Desktops & VDI

The cost of a desktop is more than just the device price tag.

For organizations facing a hardware refresh or considering virtual desktops, one of the biggest discussions is about cost. While all desktop management approaches have their pros and cons, understanding the total cost of ownership (TCO) plays a big role in the final decision.

Getting a clear picture of TCO can be harder than imagined. It involves taking a close look at the current state of your desktops, usage, budget and expenses to establish a benchmark, then factoring in the company roadmap to understand anticipated future needs. With all this information gathered you have the appropriate criteria to plug in the (estimated) costs of different potential solutions to arrive at an overall total cost of ownership for corporate desktops.

Having a clear picture of TCO for different desktop management approaches can help organizations make a more educated forecast of required budget. It can also surface a better understanding of additional benefits that could be realized such as employee productivity gains, employee satisfaction or a stronger security posture – important considerations when evaluating total cost of ownership versus a price tag.

Gathering the information to assess TCO also has the side benefit of creating a clearer pros and cons assessment for each approach. At the outset, you might assume that provisioning and supporting traditional desktops would be more affordable, but when you realize the company is moving toward a remote working or “bring your own device” (BYOD) model, the cost versus value of a fully managed virtual desktop service becomes extremely compelling.

Common Desktop Scenarios

When planning for desktop management, organizations generally have five primary options:

1. Continue deploying and supporting traditional desktops/laptops
2. Build in-house VDI using existing infrastructure (servers and storage)
3. Build in-house VDI using new infrastructure (servers and storage, often cloud based)
4. Continue running an existing in-house VDI solution
5. Desktop as a service (outsourced model with VDI infrastructure and support provided)

No matter which of these scenarios are under consideration, the same basic questions need to be asked to get a reasonable estimate of the TCO for each solution.

Setting Your TCO Baseline

When creating an estimated TCO for desktops, organizations need to start by documenting their current state and projected future needs. This creates a baseline that can be used to assess the TCO of various desktop management options and helps organizations compare costs to their current state.

Number of Users

This is the most basic number needed when estimating the amount you'll spend on desktops: How many desktops do you need?

For some organizations, this is one desktop per end user (persistent desktops in the virtualization world). This is the right fit for workers that need constant access (i.e. working "after hours") or the ability to customize their desktops or save documents to the desktops. Other organizations may find that non-persistent desktops – also known as concurrent desktops – are a better fit. Concurrent desktops are a good fit for companies that have a shift-working model. Instead of each employee having a dedicated desktop (that goes unused when they're not on shift), the organization has enough desktops to cover demand during shift.

Determining the number of required desktops should also include any projected scaling (i.e. seasonal bursts), growth or independent contractors that the organization provisions desktops for. If headcount or contractors are a fluctuating factor, create two data points to work with in your TCO calculations: Base number of users (the bare minimum number of users you need to support at all times) and max number of projected users (to account for scaling).

EXPERT TIP: NUMBER OF USERS

If your organization uses a concurrent desktop model, augment this question with number of desktops in addition to users. For instance, if your ideal state is 60% concurrent desktops, you'll need to have an accurate count of both users and how many desktops you'd need to reach that 60% ratio.

Ideal states are just that – ideal. So it's important to understand both numbers to ensure you have a true picture of the potential TCO even if you don't achieve the ideal shared desktop ratio.

Endpoint Devices Currently Supported

Understanding which endpoints are currently supported is critical to getting an accurate budget prediction. Odds are these devices will need to be maintained and eventually replaced, so you need to understand what this will look like and how much it will cost under each desktop solution.

Will a new desktop management approach require an immediate shift in what endpoints are supported? If so, any associated costs stemming from that change need to be factored into the total cost of ownership. (This can also have a net positive affect on TCO if the organization no longer needs to support as many costly endpoints.)

Understanding the current state of endpoints gives teams a clear baseline of the level and cost of support currently being expanded. This is critical if organizations are comparing a potential change to the “do nothing” option and if they want a true understanding of TCO.

Common endpoint solutions supported today include:

- Desktops
- Laptops
- Thin clients
- Zero clients
- Employee BYOD (bring your own device)
- Mobile devices (smartphones, tables, smartwatches, etc.)

Average Life Per Endpoint Device

If the organization currently provisions physical devices, document the average lifecycle or refresh cycle for these devices. A laptop does not last forever and it's inaccurate to count that as a onetime cost. Instead, accurate lifespan expectation and replacement costs should be calculated into the total cost of ownership.

The average lifespan and replacement cost for VDI scenarios using company-issued thin clients should be treated similarly.

EXPERT TIP: EXTENDING ENDPOINT LIFE

Desktop virtualization can extend the useful life of existing endpoints by allowing organizations to use older endpoints as kiosks, or dumb terminals, that connect to virtual desktops. This is particularly relevant as older endpoints may still be functional, but might not be powerful enough to support modern operating systems and software. Using them to access virtual desktops allows companies to postpone buying new endpoints while giving employees access to the latest technology via virtualization.

What Devices Do You Want to Support?

Different than what endpoints are currently supported, this is an important future-state question. Replacing hardware and infrastructure is not an easy or inexpensive undertaking. If the organization has plans to introduce new endpoint types that needs to be taken into consideration now.

This question often requires the input of business leaders outside of IT. While the IT department will have a solid understanding of what endpoints are being supported at the moment, they may not have insight into the company's five year goal to implement BYOD, go “greener” or shift to a more remote working model. All of these business-focused initiatives can have real impact on the end point devices in use. Planning for the change now can prevent duplicate work in the near future and ensure you select a solution that can grow with the organization.

Calculating Desktop Total Cost of Ownership

With a baseline understanding of what is currently supported and the organization's roadmap, it's time to move into a more hardline cost calculation. You'll combine the information gathered above with the information documented below to create a TCO projection. This should be done for each solution being evaluated.

See the worksheet at the end of this guide for a centralized place to document the following data.

Current Endpoint Costs

Now that you know what endpoints are supported and their average lifespan, you can calculate the cost of purchasing and replacing those devices. Do this for each type of endpoint supported using the following guide:

- Average purchase cost per endpoint (*Maintenance and support are considered below*)
 - Average cost per desktop (non VDI)
 - Average cost per laptop
 - Average cost per thin/zero client
- Annual endpoint cost (average cost divided by number of years in anticipated lifespan)
 - Physical desktop
 - Laptop
 - Thin client
- Total number of users per device
 - Physical desktop
 - Laptop
 - Thin client

With that break down, you can calculate your current total annual cost per endpoint. *(See the table on Page 9.)*

Future Endpoint Costs

Consider replacement costs for the current desktop approach and anticipated costs associated with organizational growth or an endpoint change. A few key pieces of data to gather include:

- Average number of endpoint devices replaced monthly and yearly
- Anticipated yearly net new growth (new endpoints minus anticipated employee turnover)
- Anticipated endpoint changes and associated scope and cost

When calculating TCO it's important to have an understanding of cost for today's state and the projected cost for the future based on either organizational change or from switching desktop solutions. The future endpoint cost could look very different when comparing traditional desktop deployments versus supporting virtual desktops (which can drastically reduce endpoint cost by extending the life of existing endpoints or allowing organizations to realize cost benefits from moving to a "bring your own device" (BYOD) model). This difference will have a major impact on the overall total cost of ownership.

Software Costs

Desktops aren't one size fits all, the software required for each use case will affect required desktop resources (RAM, CPU, GPU, etc.). The software required and number of users in each use case will impact your overall desktop costs. When calculating this cost you can tally each use case separately or group use cases based on similar computing requirements.

When assessing software costs, be sure to consider one time purchases, regular upgrades and monthly software as a service (SaaS) subscriptions. The easiest way to calculate this number is to define the software suites for each user or use case, put a total monthly or annual cost to that use case and multiple that number by the total number of users who fall into that use case. Adding that monthly or annual cost to the cost of the desktop required to run those programs will give you a more detailed picture of the cost per desktop.

$$\begin{aligned} & \text{Software cost per use case} + \\ & \text{Cost of desktop with the computing resources required to support use case} \times \\ & \text{Number of users in that use case} \\ & = \text{Estimated (software-driven) cost of desktops} \end{aligned}$$

Licensing is another important consideration. Popular solutions like Office 365 introduced increasingly complicated licensing considerations, and desktop virtualization can add a new dimension. When running a desktop program entirely in-house, your team is responsible for licensing. If you opt for an outsourced desktop solution, the vendor may be able to provide the required licensing through its Services Provider Licensing Agreement (SPLA) or advise you on the required licensing.

Personnel Costs

When calculating total cost of ownership for desktops, many organizations only think about the desktop itself, but the personnel required to support desktop deployments is just as important and has a major influence of TCO. This is especially important as organizations consider advanced solutions such as desktop virtualization. VDI requires specialized IT staff to properly implement and maintain virtual desktops and these experts often have a higher salary range than more generalized IT specialists.

To get a true picture of desktop-related personnel costs you need to consider more than just the yearly salary of IT staff. How this staff is spending its time and the primary (ideal) job focus also need to be considered. To assess personnel cost, collect information on:

- Average desktop support staff salary
 - Including network, systems and storage engineers and any other employees involved with ultimately supporting end use computing
- Average provisioning hours for new users or replacement endpoint devices
- Average monthly desktop maintenance hours
- Average monthly infrastructure maintenance hours
- Target percentage of time IT spends on desktop support
- Over/Under percentage of actual IT time spent on desktop support versus target

If in-house IT personnel are spending too much time on desktop and infrastructure maintenance at the expense of more important job focuses, the total cost per desktop implicitly increases. While you may not be able to put a hard dollar amount on this, it's an important consideration to be aware of and compare.

Making Educated IT Decisions

By gathering the information discussed, IT teams and business leaders are prepared to deeply evaluate the total cost of ownership for desktops. Clearly, a lot more goes into understanding TCO than just a price tag on a PC or the per user cost of a virtual desktop.

Establishing a baseline of current costs and predicting future need combined with evaluating associated desktop costs like software and personnel paint a full picture of the true cost of a desktop. This practice often highlights everything attractive low prices leave out and makes slightly higher desktop quotes make more sense.

As with many things in life, buying the cheapest option and expecting the best results more often than not leaves the purchaser disappointed. Instead of falling victim to sticker shock or "too good to be true" desktop offers, put in the time to calculate and evaluate the total cost of ownership so you can make an educated decision and be happy with your solution.

Desktop TCO Worksheet

This information gathering worksheet will help you collect the data needed to calculate the total cost of ownership for desktop solutions.

Number of users/desktops required: _____

Min. _____

Max/Anticipated _____

Current endpoint devices supported: _____

Projected endpoint devices supported: _____

Total number of users per device:

Physical desktop: _____

Laptop: _____

Thin client: _____

(Add additional categories for each endpoint device supported)

Average cost per endpoint:

Average cost per desktop (non VDI): _____

Average cost per laptop: _____

Average cost per thin/zero client: _____

(Add additional categories for each endpoint device supported)

Annual endpoint costs (average cost divided by number of years in anticipated lifespan):

Physical desktop: _____

Laptop: _____

Thin client: _____

(Add additional categories for each endpoint device supported)

TOTAL COST OF OWNERSHIP FOR DESKTOPS & VDI - WORKSHEET

Total annual cost of all current endpoints:

(Annual cost per device x number of users with that device = Total cost)

Annual Cost Per Device	Number of Users Per Device	Total Annual Cost
<i>(desktops)</i>		
<i>(laptops)</i>		
<i>(thin clients)</i>		

Average number of endpoint devices replaced:

Monthly: _____

Yearly: _____

Anticipated yearly net new growth: _____

(New endpoints required minus anticipated employee turnover)

Anticipated endpoint changes: _____

(Include projected scope and cost)

Software based cost per desktop:

(Calculate for each use case or use case group)

Total cost of software suite by use case: _____

Computing resources required to support use case:

- RAM: _____
- CPU: _____
- Storage: _____
- GPU: _____

Cost per desktop with the required computing resources: _____

Number of users per use case:

Use Case 1: _____

Use Case 2: _____

(Add additional use cases as needed)

Cost of Software Suite	Cost of Desktop	Number of Users	Total Cost
<i>Use Case 1</i>	<i>(+)</i>	<i>(x)</i>	<i>(=)</i>
<i>Use Case 2</i>			
<i>Use Case 3</i>			

Cost of licensing per user/desktop: _____

Average desktop support staff salary: _____

Average provisioning hours for new user or replacement endpoint device: _____

Average monthly desktop maintenance hours: _____

Average monthly infrastructure maintenance hours: _____

Target percentage of time spends on desktop support: _____

Actual percentage of time IT spends on desktop support: _____

Over/Under percentage of actual IT time spent on desktop support vs. target: _____

Monthly server costs: _____

If servers are not located and maintained on premise

Monthly desktop service costs: _____

If engaging a VDI provider

EXPERT TIP: CONSIDERING COMPLIANCE

If your organization must comply with PCI DSS or HIPAA HITECH compliance standards it's important to understand how these requirements will effect your desktops. Implementing compliance fully in-house is time consuming and expensive and should be factored into desktop TCO. Is compliance is a factor, consider a desktop as a service provider that offers [compliant solutions](#).



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DESKTOP AS A SERVICE RFP TEMPLATE

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