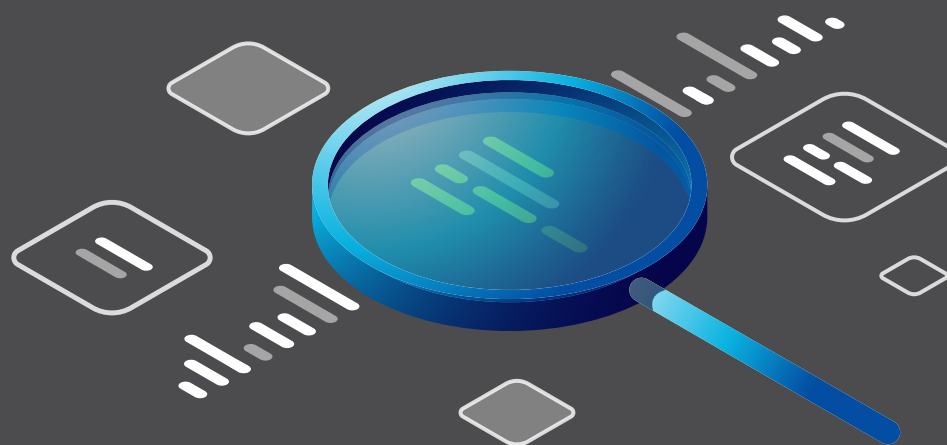




NUTANIX PRIVATE CLOUD DESIGN GUIDE:

Cost Governance

Effective Cost Governance with Nutanix Private Cloud

Monitor private cloud resource consumption at a granular level, automate chargeback, and make sure spending stays on track.

To deliver on business needs and accelerate digital transformation, enterprises need private cloud infrastructure that offers the simplicity and scalability of public clouds and the security and control of on-premises datacenters. However, many private cloud deployments on traditional IT infrastructure have deficiencies in key areas, resulting in:

- Unexpected high costs and lack of cost governance
- Insufficient business continuity
- Cumbersome or brittle automation
- Complex, siloed storage infrastructure

Built on the industry's leading hyperconverged infrastructure (HCI) software, Nutanix private cloud solutions address these limitations and extend easily to encompass hybrid cloud deployments.

This guide explains how to utilize the cost governance features of the Nutanix private cloud solutions to ensure your cloud operations are cost effective.



Why Cost Governance is Critical

Cost governance has become a significant challenge for private cloud deployments. Cost overruns result from excessive upfront costs, unexpected scaling costs, wasted or poorly utilized resources, and lack of visibility into total cost of ownership.

Private cloud users are often better at consuming resources than they are at releasing them, either due lack of visibility, mistakes, or neglect. To control usage and avoid wasting resources, you need to be able to monitor and meter actual costs and be able to easily identify resources that are underused or abandoned.

A private cloud solution needs the ability to monitor, meter, and chargeback costs to end users and departments. Your private cloud should include granular cost metering that accounts for all contributing datacenter costs, enabling you to better predict future needs, plan for growth, and track costs and budgets.

Nutanix private cloud solutions reduce upfront deployment costs and rationalizes scaling. Nutanix HCI scales in predictable increments, avoiding the significant—and often unplanned—costs associated with scaling traditional infrastructure. For ongoing cost governance, a Nutanix private cloud can include Xi Beam.

True costs can be surprisingly difficult for IT teams to estimate accurately for a datacenter environment. Beam incorporates an accurate total cost of ownership (TCO) model that includes often overlooked sources of overhead, allowing you to monitor resource consumption, create and track budgets, and implement chargeback to increase accountability. Nutanix provides deep visibility into consumption patterns across your private cloud and public cloud deployments.

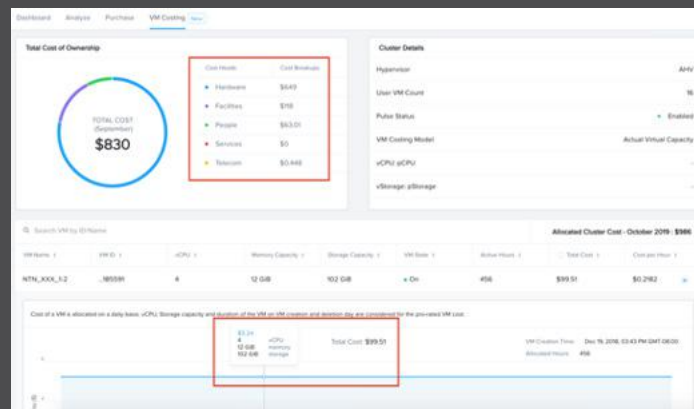
This design guide explains the Beam TCO model, and describes how to use Beam's cost allocation, chargeback, and budgeting capabilities.



A TCO Model for Private Cloud

Nutanix has created a cost model that is comprehensive, intuitive, and automated, while also being flexible and extensible to accommodate a wide range of business needs. The model incorporates defaults based on industry averages, enabling it to deliver reasonable accuracy even without site-specific configuration.

The TCO model accounts for capital and operating costs in six areas, allowing you to determine the true cost of owning and operating a Nutanix private cloud solution:



Find Out More:

- nutanix.com/private-cloud
- [Private Cloud Demo](#) (video)
- nutanix.com/beam
- [Total Cost of Ownership for Nutanix](#)



- **Hardware.** Beam analyzes your Nutanix environment and populates the model automatically, including amortizing hardware license costs for Nutanix NX appliances, OEM appliances, and third-party servers.
- **Software.** Software costs are amortized for all installed Nutanix software. You can optionally add costs for third-party software such as monitoring tools by adding the cost per license.
- **Facilities.** Power, cooling, and space costs can be difficult for IT organizations to determine directly. Nutanix instead estimates power and cooling costs based on your electricity costs and the efficiency of your datacenter using industry-standard values. Space costs are calculated based on the number of nodes in use and the per-rack cost. The model accommodates on-premises versus co-location.
- **Telecom.** Nutanix accounts for network switches and other telecom-related costs.
- **Services.** The model amortizes any Nutanix or third-party services as part of the TCO model, including both one-time and recurring costs.
- **People.** The TCO model accounts for both outsourced and internal administrative costs.

Out of the box, the Beam TCO model provides greater visibility and a good approximation of your actual costs. To achieve the best results, it's worth taking the time to update Beam's TCO model with information specific to your operations.



Cost Metering

The TCO model described in the previous section is applied to your Nutanix private cloud at the cluster level. Once you have TCO-based cluster-level costs, Beam is able to provide cost details for the various resources in your cluster, such as VMs, snapshots, storage buckets, and so on.

Beam is then able to provide costs for individual resources within a cluster based on allocated capacity. Three capacity metrics are considered: CPU, storage, and memory.

For example, if a cluster has 100 cores, 100TB storage, 100 GB of RAM and there is a VM with one vCPU, one TB of storage, and a GB of RAM allocated to it, Beam automatically apportions a certain amount of cost to that VM based on the ratio of resources allocated to the VM to resources available in the cluster. In this example, the VM will be apportioned 1/100 of the total CPU cost, 1/100 of the total storage cost, and 1/100 of the total memory cost associated with that cluster—based on the actual costs for that cluster. You can also define your own target for capacity allocation if you have VMs that are overprovisioned.

The benefit is that you get out-of-the-box visibility into TCO-based VM costs. Enabling you to finally answer questions such as, “how much does this VM actually cost to run in my datacenter?”.

Beam Helps London Heathrow Manage Spending

Heathrow Airport is one of the busiest in Europe. The Heathrow IT team defined a cost allocation structure that everyone agreed on and implemented that structure in Xi Beam for cost governance.

Now everyone understands the meaning of all reports. Xi Beam lets the team:

- Easily apportion costs across projects
- See spending forecasts by business function
- Track spending against budget
- Create ad hoc views and reports within the common structure

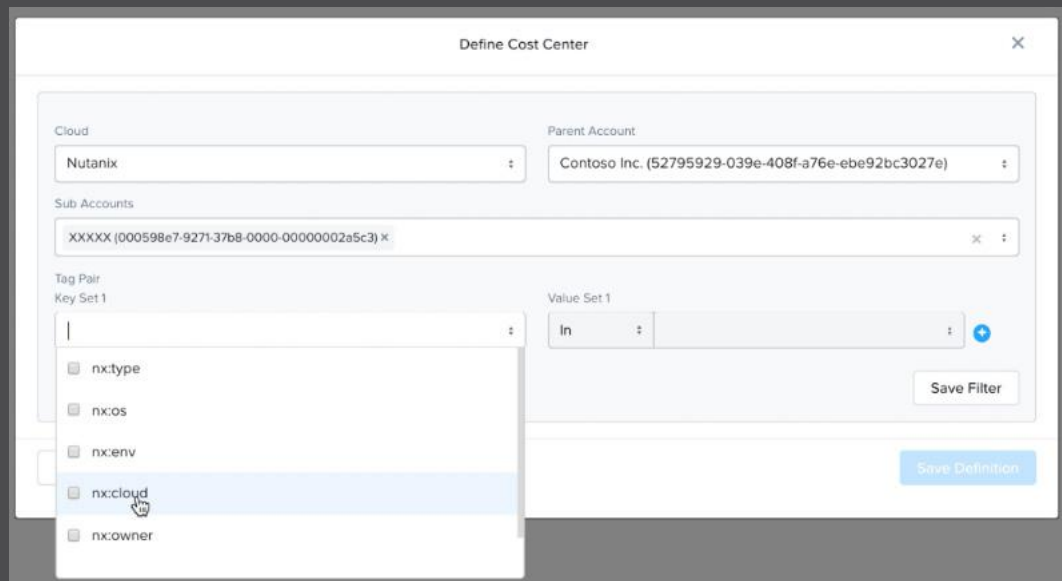
Xi Beam cost metering provides granular resources costs. Cost centers and business units enable you to monitor costs at any desired level of granularity and implement chargeback.



Cost Centers, Business Units, and Chargeback

Beam gives you the flexibility to configure cost centers to match your business structure and business needs. For example, cost centers can be defined based on organization/departmental structure, geography, or line of business.

You can also create a cost center for an application, project, team, or even a particular user. You are free to define any cost center that makes sense for your needs so that you can view a granular cost breakdown for that cost center.



The screenshot shows the 'Define Cost Center' dialog box with the following fields and options:

- Cloud:** A dropdown menu with 'Nutanix' selected.
- Parent Account:** A text field containing 'Contoso Inc. (52795929-039e-408f-a76e-ebe92bc3027e)'.
- Sub Accounts:** A text field containing 'XXXXX (000598e7-9271-37b8-0000-00000002a5c3)'.
- Tag Pair:** A section with a 'Key Set 1' dropdown and a 'Value Set 1' dropdown. The 'Key Set 1' dropdown is open, showing a list of options: 'nx:type', 'nx:os', 'nx:env', 'nx:cloud' (highlighted), and 'nx:owner'. The 'Value Set 1' dropdown contains 'In'.
- Buttons:** 'Save Filter' and 'Save Definition' buttons are located at the bottom right.



Using Tags

When you define a cost center, costs are allocated based on tags. Beam is able to import tags directly from Nutanix Prism, the Nutanix management tool. (In Prism, tags are called Categories.) So, if you're a Nutanix customer already, there's no need to re-enter this information. You must enable Pulse for this capability to work. Whenever a tag is created within Prism, it shows up in Beam automatically.

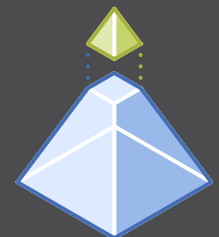
Multiple tags can be added to a cost center definition to ensure it covers the resources required; costs can be split among multiple cost centers to achieve an accurate view of spending across your organization.

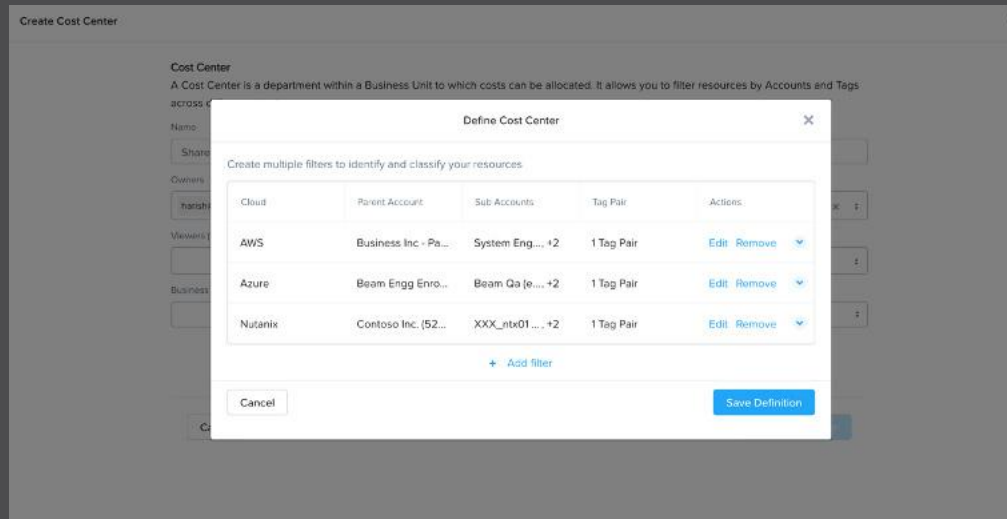
Beam also is able to import tags and labels from public clouds including AWS, Azure, and Google Cloud. Cost centers are inherently multi-cloud, allowing you to see private cloud and public cloud costs in the same view with high granularity.

Simply add tags to a cost center from the appropriate public cloud accounts to see costs spanning environments. By accurately identifying the resource consumption for each cost center, based on the tags you specify, Beam helps you more accurately and easily track spending across your operations.

You may have some cloud resources that are untagged or untaggable. It is important to chargeback those resources to the appropriate cost center for accuracy.

A "business unit" aggregates multiple cost centers into a single entity. For example, you could aggregate prod and dev cost centers into a business unit called Engineering. Business units allow you to roll up cost information for larger and larger segments of an organization.





Implementing Chargeback

Once resources have been allocated to cost centers and business units, Beam has all the information needed to implement chargeback at the appropriate level of granularity for your organization. The tool can even perform necessary invoicing.

Beam implements chargeback by allowing you to allocate the cost of untagged resources across multiple cost centers. For example, 70 percent of a database's costs can be allocated to the prod cost center and 30 percent to the dev cost center.

Chargeback reports can be configured to go to appropriate financial admins, executive teams, etc. to help them plan and allocate budgets more accurately.

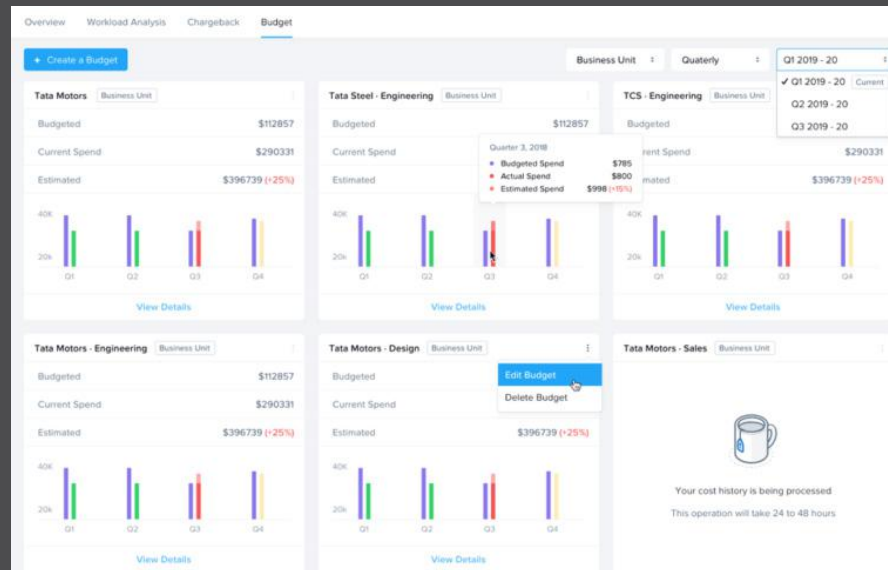
Find Out More:

- [Smart Tag Management for Cloud Governance](#) (eBook)
- [Multi-Cloud Budgeting and Chargeback](#) (blog)

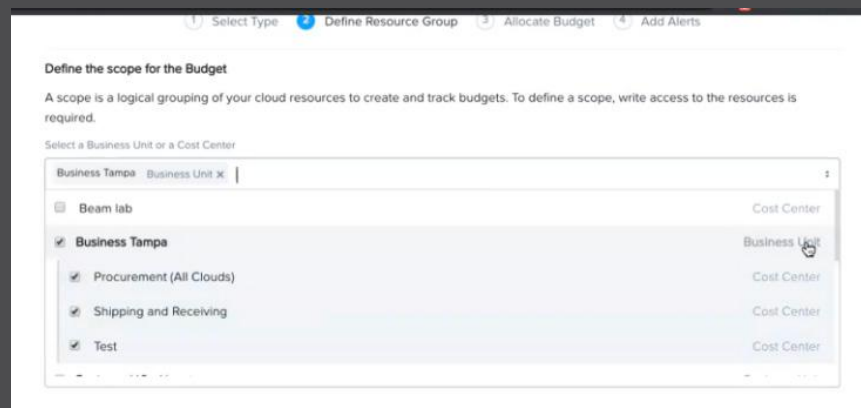


Budgeting

Xi Beam allows you to budget at the cost center or business unit level or create fully custom budgets and track actual spending against it.



A budget is defined in terms of the relevant business unit and/or cost center(s).



Quickly create budgets, track spending, and receive alerts when deviations occur



Spending for a budget can be allocated automatically by Beam, or you can allocate budget manually and enter the desired spend for each quarter and each month if desired.

1 Select Type 2 Define Resource Group 3 Allocate Budget 4 Add Alerts

Define Budget

Budget Name: Financial Year:

Allocation Type

Choose the allocation type

Automatic Allocation ☐ Allow Beam to allocate budget based on your spend.

Manual Allocation ☒ Manually allocate budget based on your plan.

Set Annual Budget: Distribute Equally

Quarter 1

Quarter Budget: Distribute Equally

Jan: Feb: Mar:

Quarter 2

Quarter Budget: Distribute Equally

Apr: May: Jun:

Once a budget has been established, spending can be tracked from the Budget Dashboard. From the dashboard, you can drill down to see more detailed cost breakdowns. Alerts can also be configured to notify a budget owner when a threshold is crossed so they can take corrective action.

Find Out More:

- [Multi-Cloud Budgeting and Chargeback](#) (blog)
- [Cost Optimization for the Enterprise Cloud](#) (blog)



Control Costs with Nutanix Private Cloud

Nutanix private cloud solutions are uniquely suited to meet your company's needs. Because Nutanix eliminates IT complexity, simplifies management, integrates data services, and improves data protection and security, it enables a private cloud to be more agile, more scalable, and—ultimately—more effective. Nutanix reduces the cost of deploying and operating a private cloud, while increasing service levels. With Xi Beam for advanced cost control, Nutanix helps you stay on track with private and multi-cloud spending.

Designing your private cloud to achieve cost governance requires some planning and diligence, but conceptually the process is straightforward:

- Xi Beam provides a good approximation of private cloud costs out of the box. Enter site-specific information into the TCO model for each location covered for even greater accuracy.
- Configure VM allocated capacity if desired for the most accurate cost metering.
- Define Beam cost centers and business units. In most cases, this maps directly to your organizational structure, but Beam can accommodate otherwise. For existing Nutanix customers, Beam can get this information from Prism.
- Define budgets for the business unit or cost centers you want to track and create appropriate alerts.
- Implement chargeback rules and setup chargeback reports to go to financial admins.

Using the information discussed in this guide, you can begin thinking about your needs with regard to each of these steps. Use the links provided in each section to dig deeper into specific topics. A little upfront effort pays off with greater visibility and improved cost governance.



Getting Started with Nutanix Solutions

You can try Xi Beam for free by starting a [14-day free trial](#) to see how Beam can help you optimize cloud resource usage and implement governance policies to control public & private cloud spend.

Free Trial

You can also [take a test drive](#) of Nutanix infrastructure with no hardware, setup, or cost. Experience the simplicity and agility of public cloud combined with on-premises performance, security, and control via an easy-to-follow guided tour.

Test Drive

Private Cloud Design Guides in this Series:

- [Automation](#)
- [Business Continuity](#)
- [Security](#)
- [Storage Consolidation](#)

To learn more about how Nutanix can help you transform your private cloud visit nutanix.com/private-cloud. You can contact Nutanix at info@nutanix.com, follow us on Twitter [@nutanix](https://twitter.com/nutanix), or send us a request at www.nutanix.com/demo to set up your own customized briefing.

