

CLOUD HOSTING BUYER'S GUIDE

This eBook will help you:

- Understand the benefits of cloud computing
- Determine which cloud solution is best for your business needs
- Discover what to look for in a prospective cloud provider

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Executive SUMMARY

Organizations are no longer asking “if cloud,” they are asking “which cloud?” Determining which type of cloud solution, platform and provider is becoming increasingly difficult with the myriad of choices available today. Selecting the right cloud solution **requires thorough analysis regarding the level of security, control, customization and support** your business requires. This eBook will give you insight into which cloud delivery model is best suited for your needs whether that be public, private or hybrid cloud.

Additionally you will learn which type of cloud solution your organization may want to explore and the key considerations you should evaluate when selecting a solution and service provider.



Customization,
Security and
Support

Understanding the **BASICS**

You've heard about cloud, but may still be wondering what it is and how it can help your organization. A cloud deployment allows applications and data to reside on a virtual network, instead of your computer. This virtual network is called the "cloud" and data is delivered as a service and managed by the service provider. Users **can access the cloud anywhere, anytime, on any device**.

You might be surprised to know cloud has been a concept since the 1960s. Cloud computing was introduced during a 1961 lecture in celebration of MIT's centennial by a computer scientist named John McCarthy.¹

“computation may someday
be organized as a public utility.”

- John McCarthy, 1990

John was also famous for coining the term “artificial intelligence.”

The 1960s continued bringing developments to the idea of the cloud. Most of the characteristics associated with today's cloud (rapid elasticity, measured service, broad network access, on-demand self-service and resource pooling) were introduced in Douglas Parkhil's 1966 book, *The Challenge of the Computer Utility*.

In the 1990s, Internet-giant, Amazon, became one of the first big players in the cloud industry. Today, there are many players to choose from. This eBook will help direct you on your journey into the cloud.

With all the buzz about cloud today, it can be difficult to discern the true meaning of cloud computing. The following chart details the five essential characteristics of cloud computing from the National Institute of Standards and Technologies (NIST)².

Essential Characteristics of Cloud Computing

ON-DEMAND SELF-SERVICE

Ability to pick which services you need, when you need them

BROAD NETWORK ACCESS

Universal access to thin or thick client platforms such as Internet, mobile devices, laptops and PDAs

RESOURCE POOLING

Computing resources are shared, serving multiple consumers

RAPID ELASTICITY

Ability to immediately scale up or down based on your needs and peak demands

MEASURED SERVICE

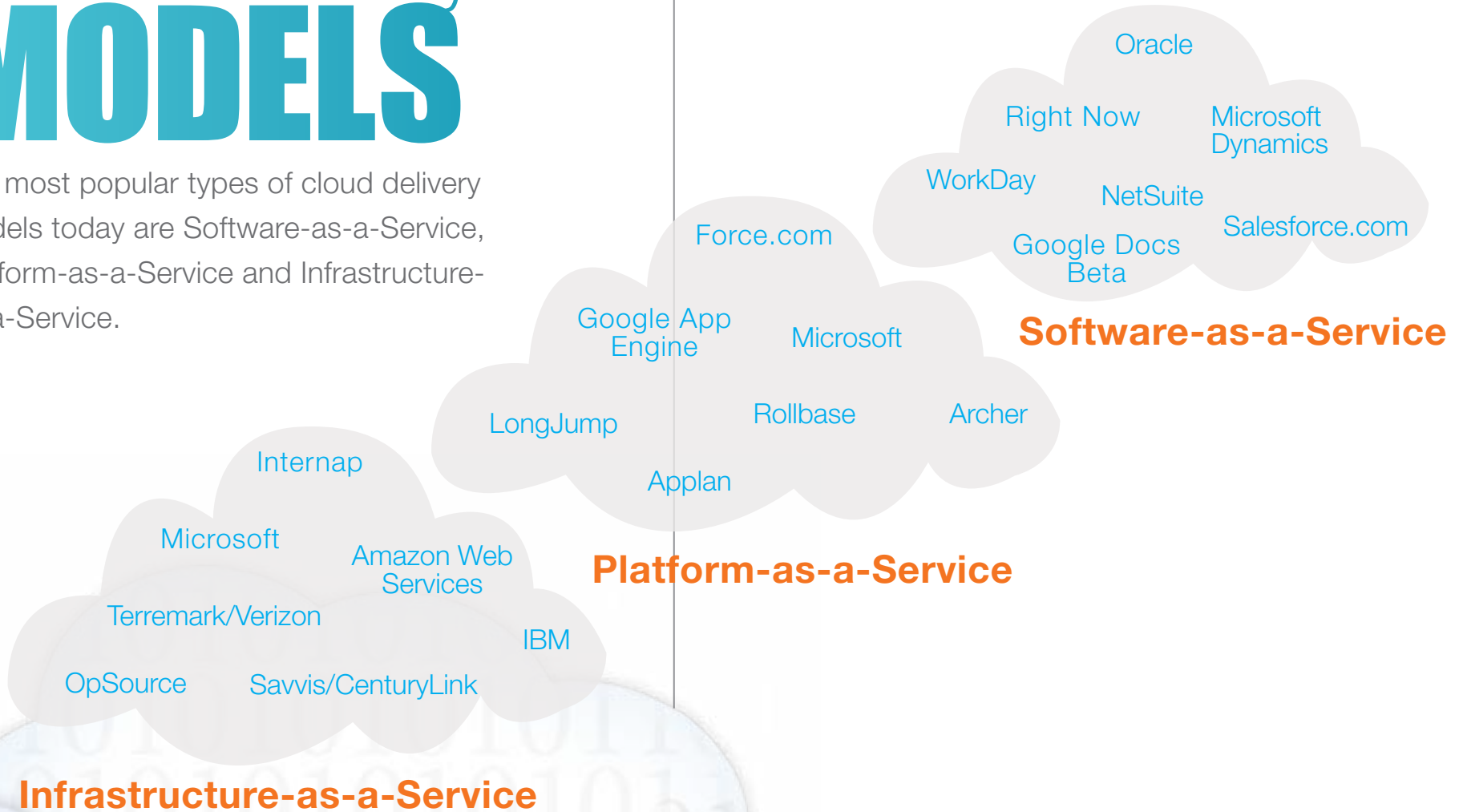
Ability to pay only for what you use

Today, the potential advantages of cloud computing are well documented. If designed and provisioned properly, cloud deployments can **lower capital and operating costs, increase flexibility and improve service levels**. Cloud deployments are particularly important because they increasingly represent an enterprise's first step toward the ultimate goal of dynamically matching IT service demand with IT service supply — a concept Gartner termed “real-time infrastructure” in its 2011 research report³.



Cloud Delivery **MODELS**

The most popular types of cloud delivery models today are Software-as-a-Service, Platform-as-a-Service and Infrastructure-as-a-Service.



Gartner, Cloud Computing: *What's it all About?* June 2010

Software-as-a-Service (SaaS):

SaaS, a software delivery model, **allows software and applications to be hosted in the cloud and accessed by users via the Internet**. SaaS has become a common delivery model for most business applications, including accounting, collaboration, customer relationship management, enterprise resource planning and many more.⁴

Platform-as-a-Service (PaaS):

PaaS is the delivery of a computing platform and solution stack as a service. PaaS offerings facilitate deployment of applications **without the cost and complexity of buying and managing** the underlying hardware, software and provisioning hosting capabilities.⁴ For developers, PaaS provides several benefits including easy access for project collaboration and quick and frequent operating system upgrades. In this type of model developers

can build, test and deploy custom applications at a low cost.

Infrastructure-as-a-Service (IaaS):

IaaS, an infrastructure delivery model, provides pre-configured hardware and storage over the Internet. This is a **cost effective delivery model, where the service provider is responsible for owning, hosting, running and maintaining the equipment**. In this type of model organizations typically pay only for what they use. IaaS is available as private, public or hybrid cloud hosting.

Does this sound **LIKE YOU?**

As you evaluate your IT Infrastructure needs, use the following table to help you determine which applications and workloads are best suited for the cloud. Do you recognize any of your business needs in these scenarios? If so, the remainder of this eBook will help you define your cloud strategy.

Use Case	Need	Attributes
Test/Development	You need to test or develop new software and applications outside of your production environment. Multiple sub-environments or sandboxes may be needed for these different projects.	Cloud allows temporary environments to be quickly provisioned and deprovisioned easing cost concerns. Code can also easily be moved to production from the cloud when ready.
Website Hosting	You need to ensure system uptime and performance on your simple or multi-tiered web applications.	Cloud is an ideal environment for web applications to manage traffic spikes on-demand, creating a positive end-user experience. No additional capex is required to run these solutions.
Seasonal/Peak Bursting	You need to ensure you have enough bandwidth when seasonal traffic or unpredictable spikes occur.	When unpredictable bursting hits, cloud hosting gives you the bandwidth required via pay-as-you-go basis.
Hybrid Cloud	You need to secure data in a private cloud, but also need the flexibility of public cloud in certain situations.	Cloud can bind these two solutions together so the private cloud is secure and the public cloud is available for instances such as bursting or test and development activities.
Disaster Recovery	You need to back up data that is critical to business continuity in a secure location that is easily accessible.	Cloud keeps data secure and helps scale and retrieve data backups quickly in disaster recovery situations. Because cloud is pay for use, minimal costs are incurred.
Data Storage and Archive	You need to store data that doesn't change very often in a secure location with enough capacity.	Cloud storage has a flexible browser-based access interface and is well suited for archiving data, publishing large files and storing cloud-based applications like SaaS.

Public, private or **HYBRID?**

Cloud computing comes in many different configurations and has useful applications across a variety of industries. This chapter delineates the differences between public, private and hybrid clouds. Read this section to help you determine which cloud configuration is right for your application(s) and your business.



Private

Public



Hybrid



Private Cloud

Private clouds are generally controlled, managed and hosted by an organization within a private data center or that of a third-party service provider.



Private clouds are ideal for enterprises working with multiple applications involving mission critical data and suited to workloads that require greater levels of customization. This type of cloud deployment provides a **higher level of control and security** due to an environment with dedicated resources. Private cloud is a great fit for organizations whose business relies on the performance and availability of their application platform. Organizations seeking the benefits of virtualization with guaranteed or reserved resources will benefit from this type of cloud deployment.

Public Cloud

Public cloud, probably the most familiar cloud computing model, is a data center made available in a metered manner to the public for purchase, resale or as a **pay-as-you-go** service. In public cloud, you are sharing infrastructure with others and receive a standardized, yet highly scalable, type of capacity where you can bring virtual machines to life, **on-demand**.

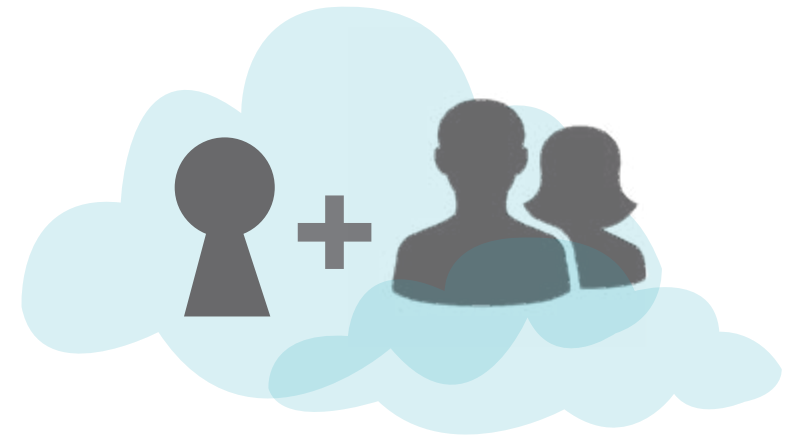


The benefits of this option include the **lack of up-front infrastructure investment and the ability to easily scale and address demand-based or workload-based fluctuations**. For example, with the elasticity of the public cloud, you are able to use cloud servers for one hour or 50 hours and only pay for what you consume. Due to this elasticity, many organizations use public cloud for unpredictable and fluctuating workloads.

Hybrid Cloud

A hybrid cloud is the combination of at least one private cloud and one public cloud that are connected to allow programs and data to be easily shared. This model allows you to choose the best match for your workload requirements at any time giving you the best of both worlds at once - the cost and scale benefits of public cloud and the security and control of private clouds.

Hybrid cloud solutions are a great fit for an organization that has some **customization, security and compliance needs but wants the ability to burst** fluctuating workloads into the public cloud when necessary.



Click here to **LEARN MORE**
 about Internap's **PUBLIC, PRIVATE AND HYBRID SOLUTIONS**

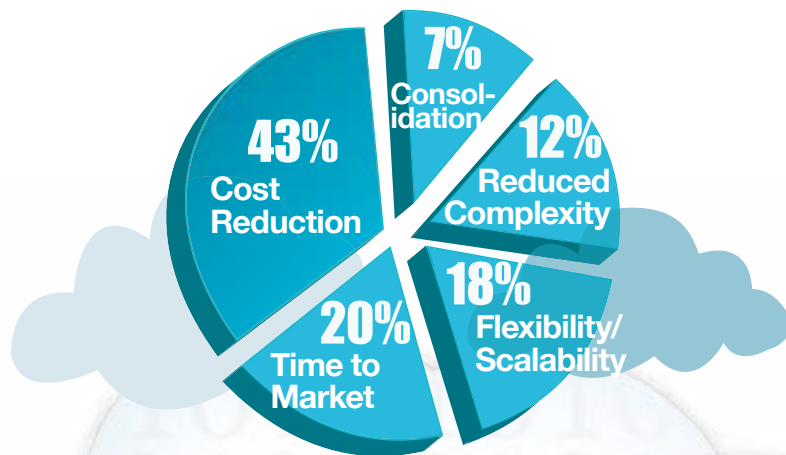
Drivers & **CHALLENGES**

Over the past several decades, the IT industry has faced many paradigm shifts. The mainframe computing era changed the way businesses communicated, enabling growth never seen before. The personal computing era allowed users to run businesses based on individual data and applications on their own computers. The network computing era established unprecedented levels of transparency across multiple groups within an organization and dramatically increased the rate of data exchange between enterprises. The next era of cloud computing is already here and will also bring new challenges.

The following charts outline the top drivers and challenges for cloud projects according to a Tier 1 survey.

Drivers

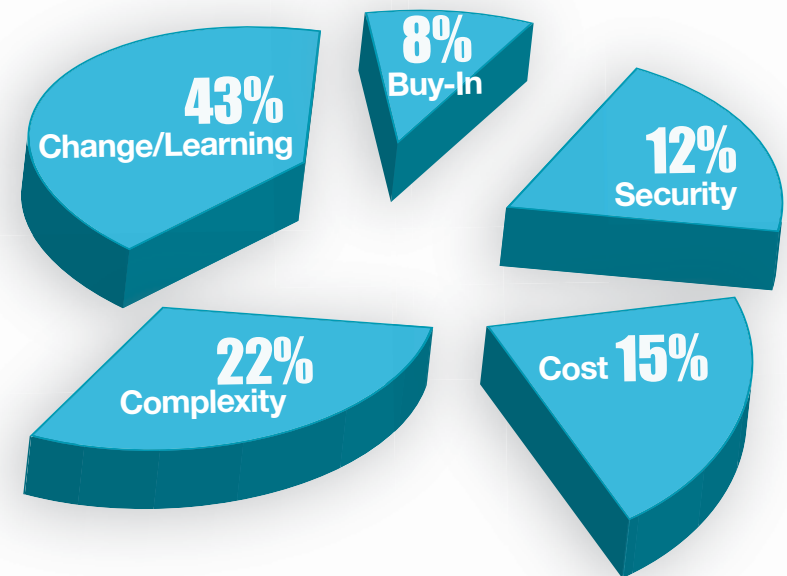
Q: List the top three drivers/justifications for your **PUBLIC** cloud project.⁵



Bottom line — the ability to reduce costs after migrating workloads to the cloud is one of today’s top drivers.

CHALLENGES

Q: List the top three inhibitors/roadblocks you had to overcome.⁵



While there are several concerns facing the cloud marketplace today, there are two key challenges that have emerged in a survey conducted by Tier 1: change/learning and complexity.

Key CONSIDERATIONS

Choosing the right solution is the first step in your journey to the cloud. Enterprises should have an overall strategic plan for cloud including recommendations from vendors on how to align different IT Infrastructure architectures with operational objectives. This section will outline the key considerations to look for when selecting a cloud solution and a cloud provider.



SCORECARD

Rate on a Scale from 1-5 (1 being least desirable and 5 being most favorable)

Connectivity (Quality, Capacity)	1	2	3	4	5
Flexibility (Breadth of Services)	1	2	3	4	5
Customization	1	2	3	4	5
Security	1	2	3	4	5
Support (Methods, Quality, Cost)	1	2	3	4	5
Service Level Agreements (SLAs)	1	2	3	4	5
Cost	1	2	3	4	5

Connectivity

Once you define your overall cloud solution needs, you should review your provider's overall connectivity capabilities. It is important to note that the network beyond the cloud represents the greatest risk to an enterprise; availability and performance are only as good as the network. Therefore, your provider should ensure that your solution does not stop at the cloud, but instead **encompasses an end-to-end approach** from the cloud to the end user.

 Click here to **LEARN MORE**
about **PERFORMANCE IN THE CLOUD**

Flexibility

If you want greater flexibility, a public cloud usually comes with no contracts or long-term commitments. Furthermore, a public cloud typically offers more

elasticity or “burstability” — giving users the ability to rapidly scale their solutions to meet planned or unplanned peak loads. A private cloud can also quickly scale, but is limited by the build-out of the existing environment. Both options are **superior from a scalability perspective than in-house deployments** that may require procuring, deploying and configuring new hardware to meet scalability demands.

Customization

If you need customized control over your virtual machine sizes, such as specifying compute, storage and memory, or if you want to specify the underlying hardware the cloud runs on, a private cloud is probably right for you. However, if you're more interested in scalability where you select from a menu of virtual machine sizes, public cloud will most likely make more sense.

Security

If your applications require a high level of security or have needs related to PCI or HIPAA compliance, then you will want the isolated resources that a private cloud provides. Make sure your private cloud is housed in a **SAS 70 Type II or SOC 3 audited facility to protect and safeguard your equipment and data**. However, if you have test and development or point solution applications without stringent security requirements and are looking for a cost effective solution, a public cloud may be the best option for you.

Support

If you have a complex environment with a sensitive application, support is crucial to your operations. With an enterprise-grade private cloud, some providers offer **24/7 technical support where certified engineers answer the phone**. If you do not need this high-level of support and instead want

a lower self-service cost model, a public cloud is probably a better fit.

Cost

Cloud solutions pass on many financial benefits to organizations as cloud deployments allow for pay-per-use, reduction of owned infrastructure and the ability to instantly scale. Cloud allows a multi-tenant architectural approach where software serves multiple customers or “tenants.” Due to the utilization of shared resources, this approach provides the opportunity for cloud providers to pass **additional cost benefits on to organizations**. A public cloud solution can be less expensive due to its commoditized attributes and is highly economical for variable workloads. Whereas the customized traits of a private cloud can increase costs but may be economically attractive for stable, predictable application uses.

Service Level Agreement (SLAs)

The “big 3” cloud providers today – Amazon, Google and Microsoft – offer no more than a 99.95% uptime guarantee in their SLA. This represents 2.16 minutes of unscheduled downtime per month, which only contributes to user dissatisfaction. You should look for a provider who can offer you **at least five nines of availability, leverage multiple backbones and offer 100% uptime through an SLA.**

Provider

Ensure your service provider has deep technical expertise and the ability to deploy customized solutions, not just an off-the-shelf solution. When choosing a provider, think about what your needs will be for the future. If you select a provider that only offers public cloud, what will you do when you need private cloud or a hybrid solution six months later? Think about the long-term relationship you’re going to have with your provider and **whether they can support you as your needs evolve.**



SUMMARY

Cloud is a culmination of a variety of IT industry trends that have abstracted the hardware from the storage and compute resources you need to run your applications. With cloud **you can run an entire application environment without worrying about the underlying hardware.**

As you map out your organization's cloud strategy, remember to:

- Identify the applications or services that are best suited for the cloud.
- Determine which cloud configuration — public, private or hybrid — best suits your organization's requirements for security, customization and cost.
- Keep your future needs in mind and plan accordingly. Align with partners that can offer the flexibility you require in the long term.

It is clear that cloud is the next frontier of the computing era. Gartner estimates the market for public cloud infrastructure services will grow to \$9.95B by 2013.⁸ Cloud computing represents a compelling and proven solution for IT departments to increase flexibility and cut costs typically associated with the deployment of new platforms.

While determining which cloud solution is right for you may take time, it is important to remember to select a provider who can support your growing needs now and in the future.

Additional **RESOURCES**

Selection of a cloud solution can yield benefits while addressing requirements for application performance by the end user. However, determining the right cloud solution requires thorough analysis regarding the level of security, customization and support your business needs. By answering the right set of questions outlined in the Private vs. Public Cloud Decision Brief, your cloud configuration requirements will become clear.



**Private vs Public Cloud
Decision Brief**

Cloud may not be the panacea IT practitioners hope it will be. If end users become disenchanted with application performance at the edge, latency will prove to be the Achilles heel of cloud. Find out why cloud computing should be part of a total solution to address IT objectives, while simultaneously improving the customer experience.



**The Achilles Heel
of Cloud Computing
White Paper**

About INTERNAP

TRANSFORM YOUR IT INFRASTRUCTURE into a competitive advantage with IT IQ from Internap, **intelligent IT Infrastructure solutions** that enable customers to **focus on their core business**, improve service levels and lower the cost of IT operations. Our enterprise IP, CDN, colocation, managed hosting and cloud solutions are differentiated by unparalleled levels of performance, flexibility and support. Only Internap combines the superior performance of our Managed Internet Route Optimizer™ (MIRO) — which leverages multiple network connections for performance — with the **rock-solid reliability of our 100% network uptime guarantee**. Since 1996, thousands of enterprises have entrusted Internap with the delivery and protection of their online applications.

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CLOUD STORAGE SOLUTIONS**

CLOUD HOSTING
BUYER'S GUIDE

INTERNAP CLOUD

- Increased flexibility, improved efficiency and enhanced security
- Maximum performance by distributing workloads to the optimal environment
- Integrated options to flexibly connect with other Internap platforms
- Optimized application agility with on-demand provisioning
- Unlimited capacity for both your day-to-day and unforeseen events
- Improved performance from the cloud to your end user
- Dedicated, award-winning enterprise support
- One application environment, one support contact and one invoice

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