



**#1** Pick the right basic vCenter deployment mode

**#2** Understand “Enhanced Linked Mode” and what it can add

**#3** Exploit vSphere’s cross-platform functionality

**#4** Decide what level of high availability is required

**#5** Overall deployment recommendations

## Top 5 Tips When Considering vCenter Architecture Design in vSphere 6.0

### Turning the promise of cloud into positive IT outcomes

With the release of vSphere 6.0, vCenter Server installation and configuration is dramatically simplified. vCenter installation now features just two components that together provide all services for the virtual datacenter: the Platform Services Controller and vCenter Server group of services.

- The **Platform Services Controller** provides infrastructure services for the datacenter.
- The **vCenter Server** group provides the remainder of the vCenter Server functionality.

Thanks to this simplification, it is easier to link multiple vCenter Servers together, providing an easier-to-implement, single-pane-of-glass view. Whether you’re planning a fresh installation or an upgrade, here are five key tips that will help you architect and deploy vCenter 6.0 to best meet your needs.

#### #1. Pick the right basic vCenter deployment mode

Choosing which type of deployment to use is critical. Once you’ve started building the environment, the model will be difficult to change and configuration limits could impact the scalability of your environment.

There are two basic deployment modes to choose between:

- **vCenter Server with an Embedded Platform Services Controller.** This mode installs all services on the same virtual machine or physical server as your vCenter Server. It’s ideal for small environments, or when simplicity and reduced resource utilization are key factors for the environment.
- **vCenter Server with an External Platform Services Controller.** This mode installs the platform services on a separate system from the one hosting vCenter services. This is ideal for larger environments, where there is a need for a single-pane-of-glass view into the environment and where there are multiple vCenter Servers on the same site.

#### #2. Understand “Enhanced Linked Mode” and what it can add

In vCenter 6.0, Platform Services Controllers can be linked together in an ‘Enhanced Linked Mode’ configuration, which can be used on either vCenter for Windows or the vCenter Server Appliance. This enables a single-pane-of-glass view into any vCenter server configured to use the Platform Services Controller domain and replaces ‘linked mode’ from previous releases which could only be used with vCenter for Windows.

When using Enhanced Linked Mode, VMware always recommends that an External Platform Services controller is used. This ensures that backups can be easily performed and, more importantly, restored in a consistent state, and that future upgrades can be more easily performed as well.

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The following are the recommended options for Enhanced Linked Mode configurations:

- **Enhanced Linked Mode with an External Platform Services Controller with no HA**  
The Platform Services Controller is configured on a separate virtual machine and the vCenter servers are then joined to that domain, providing the Enhanced Linked Mode functionality. As there is no HA in the configuration, if one Platform Services Controller is unavailable, any vCenter Servers connected will also be unavailable.
- **Enhanced Linked Mode with an External Platform Services Controller's with HA**  
One or more Platform Services Controllers are configured on separate virtual machines and placed behind a load balancer to provide high availability to the configuration. The vCenter Servers are then joined to that domain using the shared Load Balancer IP address. This provides Enhanced Linked mode functionality, but is resilient to failures since traffic is directed to the shared address.

The following can be configured but are not recommended:

- **Enhanced Linked Mode with an Embedded Platform Services Controller(s)**  
The Platform Services Controllers are embedded with vCenter and linked together, providing enhanced linked mode functionality. When configured, they will share information but are difficult to backup while maintaining data consistency.
- **Combination (i.e. embedded and external) Deployments**  
An embedded Platform Services Controller and an external Platform Services Controller are linked together, providing enhanced linked mode functionality. When configured, they will be able to share information but are difficult to backup while maintaining data consistency.
- **Enhanced Linked Mode using only an Embedded Platform Services Controller**  
A second vCenter server is linked to an existing embedded vCenter server and Platform Services Controller, providing linked mode functionality. When configured, they will be able to share information but are difficult to backup while maintaining data consistency.

There are both benefits and drawbacks to all approaches, so be sure to match the approach that best fits your objectives and use case. For more details on each of these topologies, as well as backup strategies, see VMware's KB list of recommended topologies for vSphere 6.0.x (2108548) (<http://kb.vmware.com/kb/2108548>).

### #3. Exploit vSphere's cross-platform functionality

Before vSphere 6.0, there was no interoperability between vCenter for Windows and the vCenter Server Linux Appliance. It took a full reinstall to change platforms and the vCenter Appliance also had limited feature functionality. In vSphere 6.0, all features are available with either deployment. Furthermore, with Enhanced Linked Mode, both versions of vCenter are interchangeable, which allows vCenter for Windows and vCenter Server Appliance configurations to be mixed.

### #4. Decide what level of high availability is required

High availability protection for the Platform Services Controller and vCenter Server is highly recommended. Depending on the level of protection desired, providing this may add an additional level of overhead to the configuration. With vSphere 6.0, though, the services can be protected in more ways than ever. Protection should be based on your maximum downtime limits, whether failover automation is required, and your available budget for software components.

The following redundancy methods protect both vCenter Server systems and vCenter Server Appliances (including in systems running with an embedded Platform Services Controller):

- Automated protection using vSphere HA
- Manual configuration and manual failover (e.g. using a cold standby)
- Automated protection using Microsoft Clustering Services (MSCS) (This only protects vCenter Server Systems, not vCenter Server Appliance)
- Automated protection using vSphere Fault Tolerance. Note: There could be significant performance impact from using vSphere Fault Tolerance to protect vCenter Server and the Platform Services Controller, depending on the activity in the environment.

When using an External Platform Services Controller, protection is provided by adding a secondary backup Platform Services Controller and placing both behind a load balancer.

## #5. Overall deployment recommendations

Once you're clear on the basic configuration details for both vCenter and the Platform Services Controller, you're ready to design and build. Here are our overall recommendations for deployment:

- For sites that will not use Enhanced Linked Mode, we recommend an embedded Platform Services Controller.
  - This retains environmental simplicity, including a single-pane-of-glass view of all servers, while reducing the administrative overhead that comes with configuring the environment for availability.
  - High-Availability is provided by VMware HA. The failure domain is limited to a single vCenter Server, as there is no dependency on external component connectivity for Platform Services Controller connectivity.
- For sites that will use Enhanced Linked Mode, we recommend using external Platform Service Controllers:
  - This configuration combines external Platform Services controllers with load balancers (recommended for High Availability). The number of controllers depends on the size of the environment:
    - For two to four VMware solutions: a single platform services controller is required with no HA; two are required if HA is configured behind a single load balancer.
    - For four to eight VMware solutions: two platform services controllers linked together are required for no HA; four for HA configured behind two load balancers.
    - For eight to ten VMware Solutions: three platform services controllers linked together required for no HA; six for HA configured behind three load balancers.
  - High availability is provided via multiple Platform Services Controllers and a load balancer to provide failure protection. Additionally, all components are still protected by VMware HA.

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