

Daly Computers Webinar for MEEC:

Moving to a Virtualized Environment

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Questions

Please submit your questions using the chat box on the side, or hold them until the end of the presentation for the Q&A period. All questions will be answered during the Q&A period.

Company Background

- Proven track record with 23 years experience in State, Local and Education in Maryland.
- Minority Business Enterprise (MBE).
- Ability to provide the complete solution as all of the hardware, software and services discussed today are available on the MEEC contract as well as other state contracts.
- Robust Professional Services Offerings delivered by our Project Management and Systems Engineering Team.

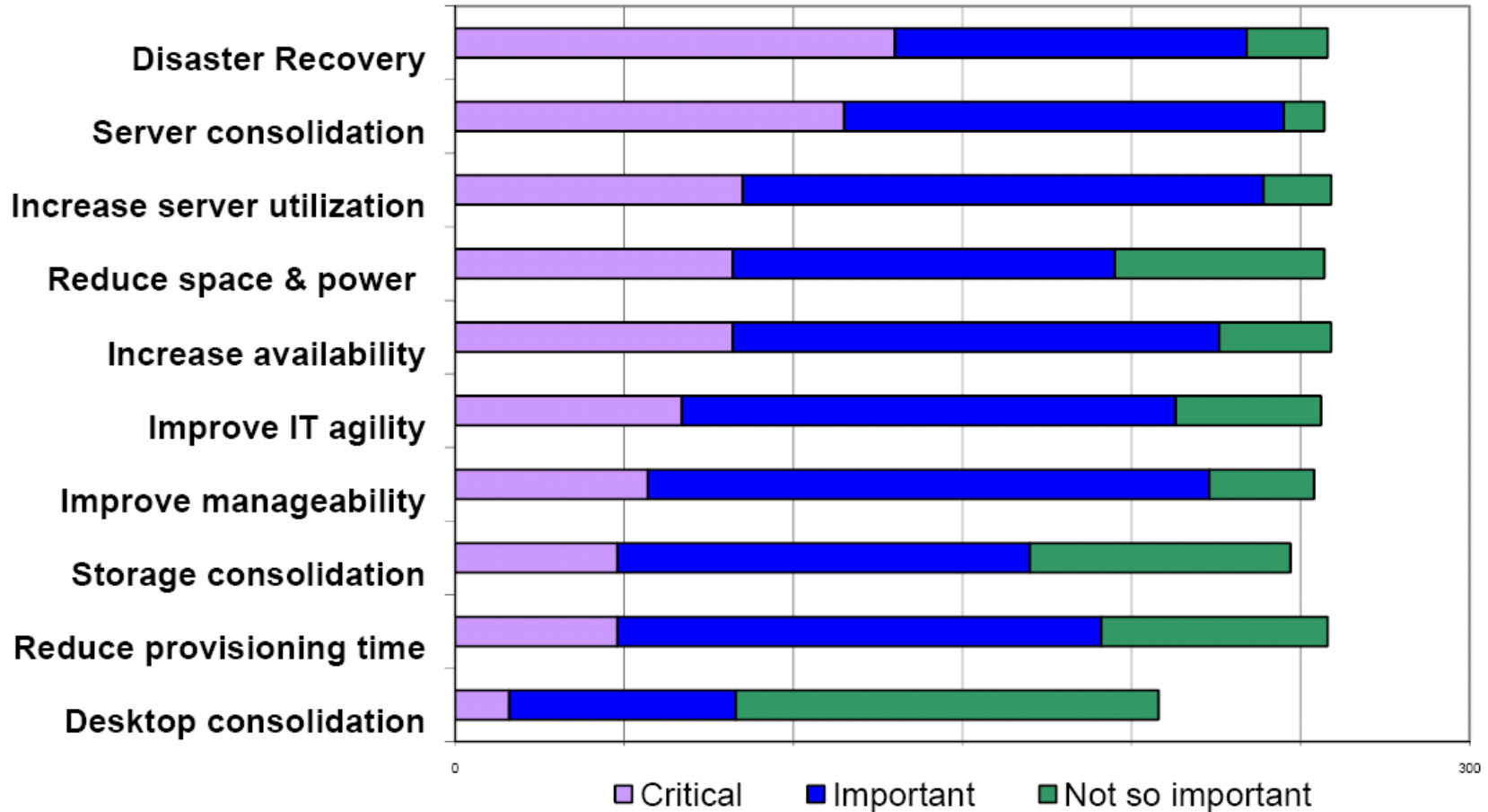
What is Virtualization?

- Virtualization products such as VMware vSphere allow organizations to virtualize existing servers and run them inside a virtual machine (vm).
- A virtualized machine becomes independent of both hardware and hardware failures.
- A virtual server can often handle 8 to 15 virtual machines at once.

Why Virtualize?

- Consolidate resources
 - Server consolidation – reduce the number of servers in your datacenter while improving your fault tolerance.
- Improve system management
 - Ease of administration and deployment.
- Improve software management capability
 - Develop, debug, deploy and maintain applications in virtual test / dev environments.
- Increase application availability
 - Fast, automated recovery and high availability. Great building block for a Disaster Recovery (DR) strategy.

What Drives Virtualization?



Disaster Recovery

- VMware vSphere adds a level of high availability, protecting an IT department from having a server hardware failure bring down an application for hours, days or longer.
- VMware vSphere, along with VMware Site Recovery Manager (SRM) are key building blocks of a Disaster Recovery solution. This allows operations to fail over to a secondary site for Continuity of Operations (COOP).

Server Consolidation

- Server consolidation benefits
 - reduce number of servers
 - reduce space, power and cooling
 - 70-80% reduction numbers cited in industry

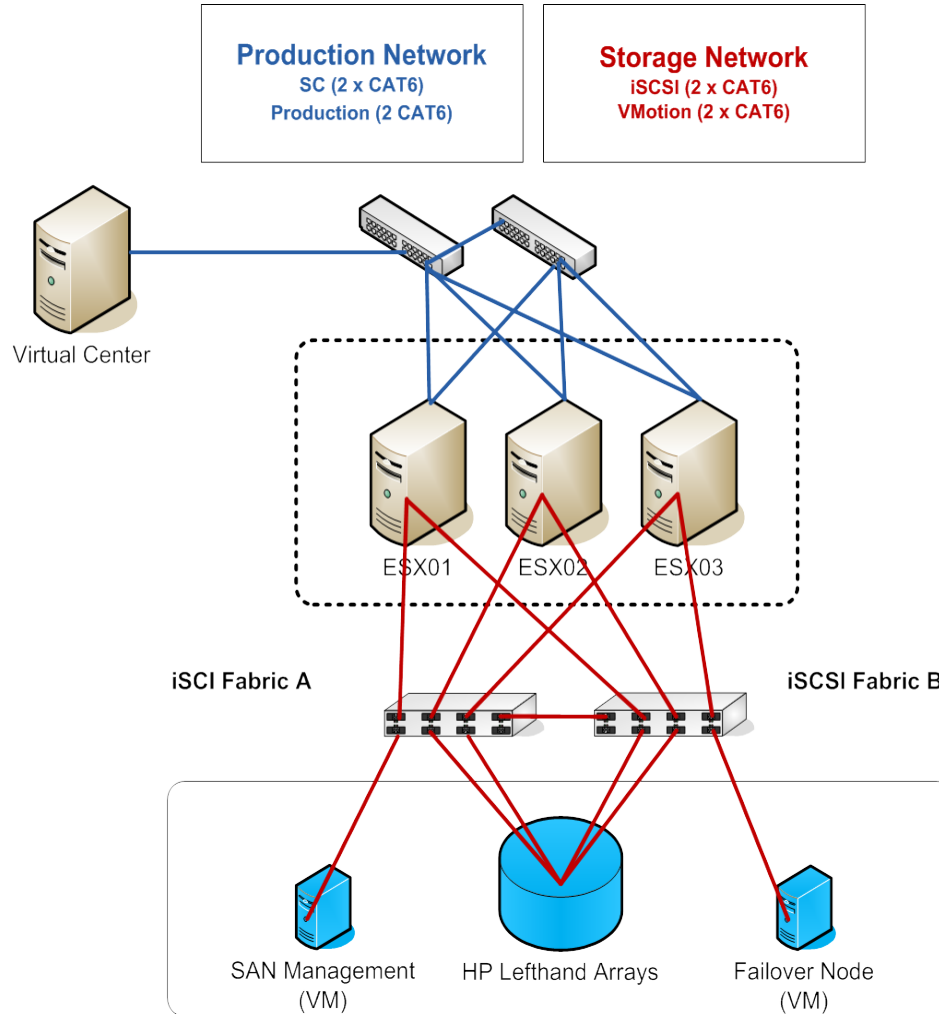
- Data center management
 - VM portability and live migration a key enabler
 - Automate resource scheduling across a pool of servers
 - Optimize for performance and/or power consumption
 - Allocate resources for new applications on the fly
 - Add/remove servers without application downtime

- Develop, debug, deploy and maintain applications in virtual machines (instant test / dev environment)
- Client level application and OS flexibility through VMware's View desktop virtualization product
 - run any application or operating system
- Virtual appliances
 - a complete, portable application execution environment

- High Availability (HA)
 - Fast, automated recovery
 - Automated failover/restart within a cluster
 - Requires a Storage Area Network (SAN)
- Fault Tolerance
 - Hypervisor-based fault tolerance against hardware failures
 - Run two identical VMs on two different machines, the backup VM takes over if the primary VM's hardware fails

- In the following sample design, each vSphere server (ESX host) is capable of replacing approximately 8 to 15 physical servers, depending on size and function.
- So 8 to 15 physical servers becomes 1 vSphere server. There are then 8 to 15 virtual machines (vms) running on that single server.
- The design shown below also introduces the concept of high availability (HA). This is achieved through the use of a VMware cluster.

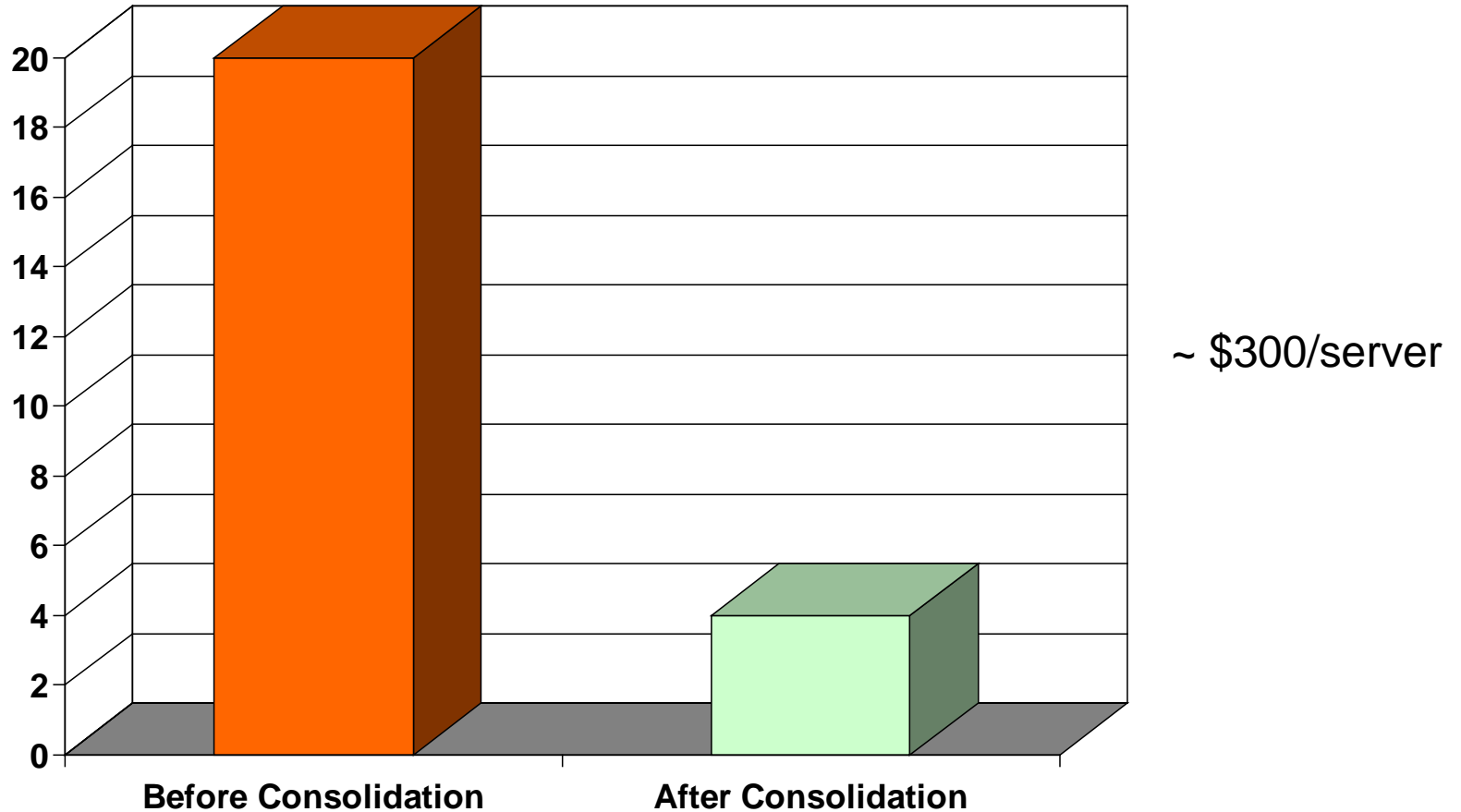
Sample VMware Design



Best Practices

- Note that in the preceeding design, a Storage Area Network (SAN) is utilized. This is a requirement for many of vSphere's features and is considered a best practice.
- iSCSI SANs, such as the HP Lefthand Networks P4000 series are a cost effective and highly available SAN option that integrates well with vSphere.
- Fiber attached SANs, such as the HP EVA are also an option in larger environments.

Power Savings



* Conservative estimates of 225W per Server.

Why Virtualize?

- Virtualization makes your IT infrastructure more flexible and efficient
- Virtualization saves \$\$\$\$\$\$
- Virtualization is a key building block for a Disaster Recovery (DR) plan
- Virtualization allows you to remove the worry over applications running on aging servers, as hardware failures are always a concern – once they are virtualized this problem goes away

Making A Decision

- What are the risks of doing nothing?
 - Increased risk of downtime in a disaster
 - Potential data loss
 - Unchecked server growth
 - More to manage with no new staff
 - Applications suffer
 - Dissatisfied users

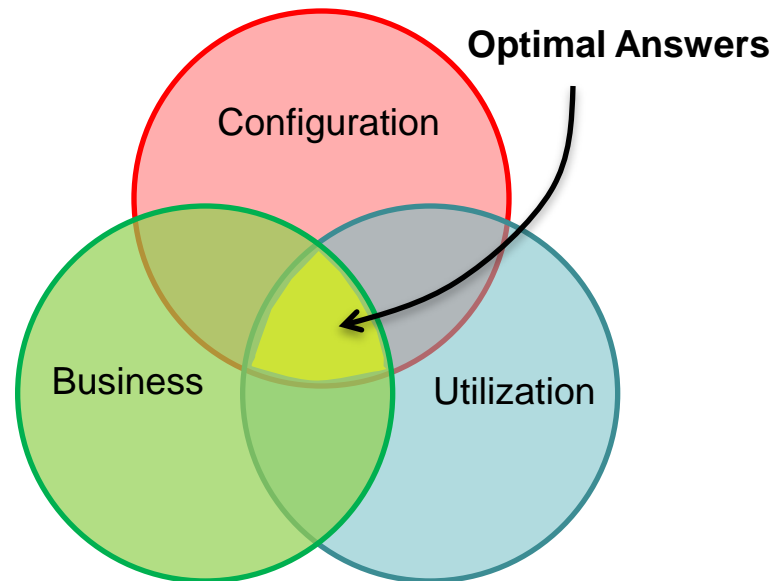
- Virtualization brings efficiency and agility but introduces COMPLEXITY & VOLATILITY
- The challenge is being SAFE & HIGHLY EFFICIENT
 - A recent Server Virtualization Maturity study found: ***Of the 72% aggressively virtualizing production servers 58% had to pause adoption to improve methodology to reduce risk***
 - The independent research study was funded by Protiviti, CA and VMware.
- The challenge is choosing the right partners with the best methodology

- Daly can perform a Server Assessment of your existing Infrastructure using data collection and design tools. With these tools we can design a right sized VMware implementation for your location based on your actual needs.

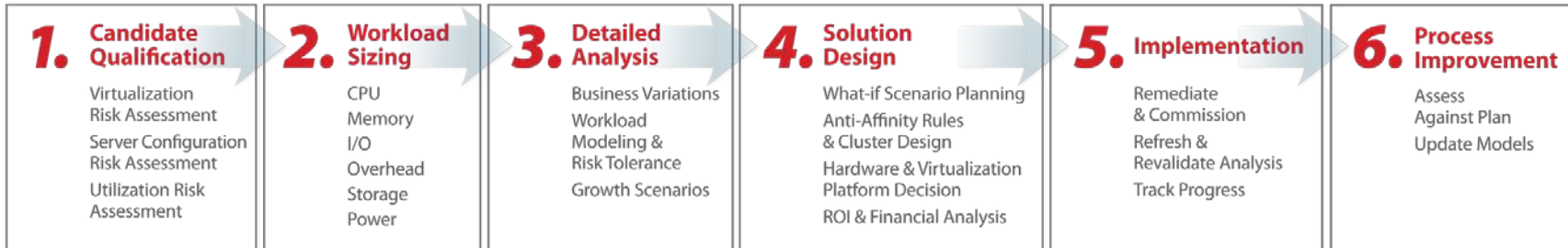
Server Assessment Tools

CiRBA DCI is purpose built, analytics software that provides the fastest and safest path to a highly efficient data center.

CiRBA is the only solution that simultaneously analyzes configuration, business and utilization constraints using sophisticated rules and algorithms to optimize workload placements and resource allocations

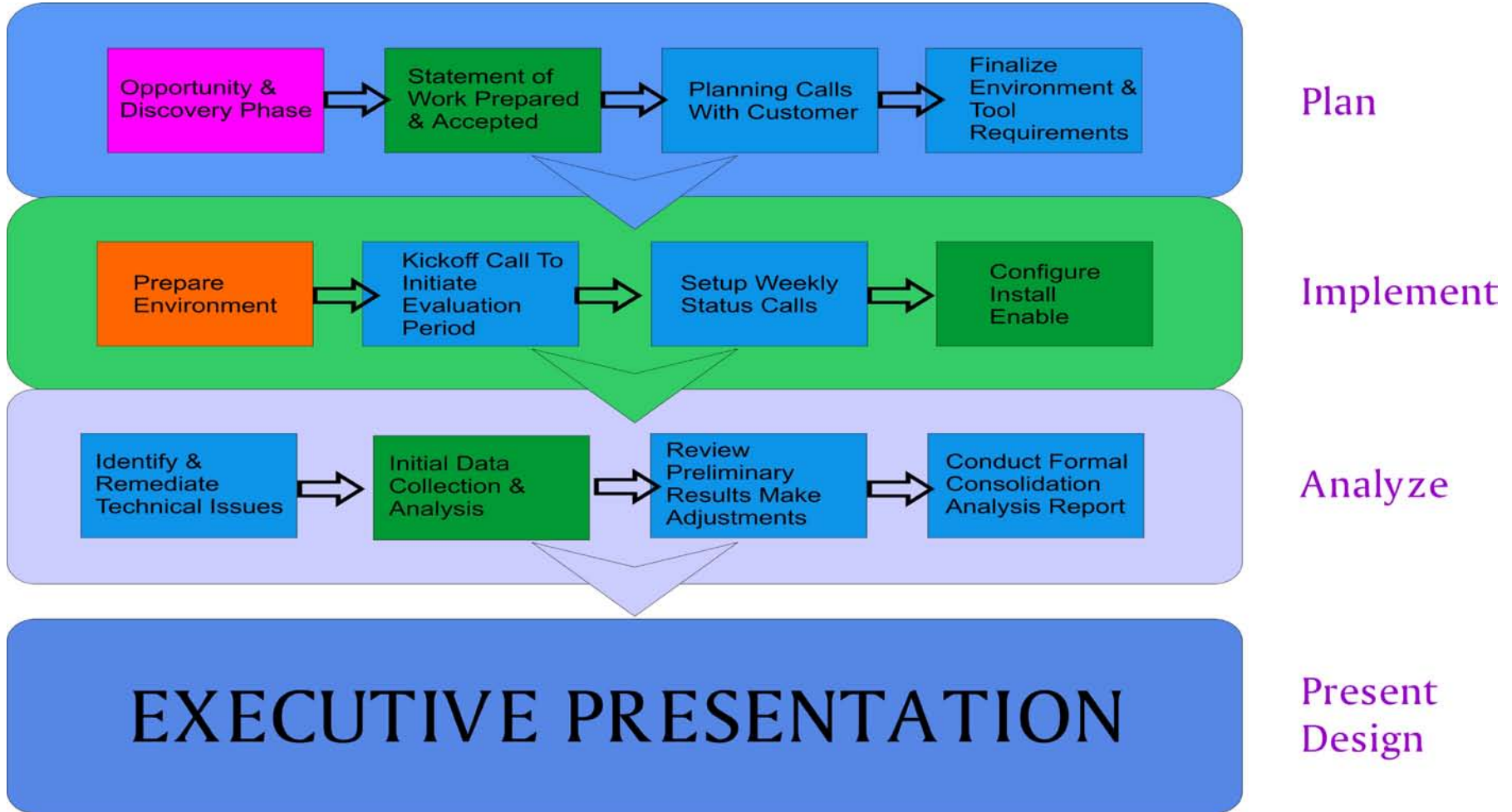


Steps to Planning Virtualization



- 6-step virtualization planning process provides the optimal path to high efficiency and low risk
- Provides end-to-end coverage through advanced analytics:
 - Avoid virtualizing the wrong servers
 - Quickly model what-if scenarios to optimize plans
 - Track progress and enable continuous improvement
- Avoid being part of the 58% forced to stop their project

Assessment Process



- As part of the Executive Presentation, Daly will provide a Server Assessment Consolidation Report that lays out the Objectives, Scope and Approach used, and determines which servers can be virtualized and provides sizing for the new virtualized solution. An inventory of your existing hardware and server Operating Systems is also included.

Q&A

- Daly offers a more indepth 3 hour presentation on our virtualization and storage solutions at our facility. This presentation includes live demonstrations of vSphere in a production environment.

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Upcoming Events

- MEEC Show - Visit the Daly booth April 30th at the BWI Airport Marriott
- Daly Show – Visit the Daly show May 6th at the BWI Airport Marriott – to register go to www.daly.com
- Daly's next MEEC webinar - *Save Money and Increase Performance with Server Consolidation* May 4, 11am

Prize Drawing

- We will now hold a drawing for a \$25 Best Buy gift card from among the attendees at our webinar today.

THANK YOU FOR ATTENDING!