

# Simplifying Storage Provisioning

Erik Smith – EMC  
T11/10-370v0

# Agenda

**Simplifying storage provisioning – Why should we?**

**Meet the Customers**

**Solutions for simplifying storage provisioning**

**The storage provisioning process**

**Conclusions**

**Solution elements**

## Simplifying storage provisioning – Why should we?

- 1. Server virtualization environments**
- 2. Cloud environments**

## Meet the Customers (according to ESG)

- **Many customers are aggressively consolidating data centers**
  - Server virtualization (>50%)
  - Physical locations (33%)
- **Consolidation is being driven by cost reduction initiatives**
  - Real estate
  - Power
- **Energy efficiency**
- **Cloud**

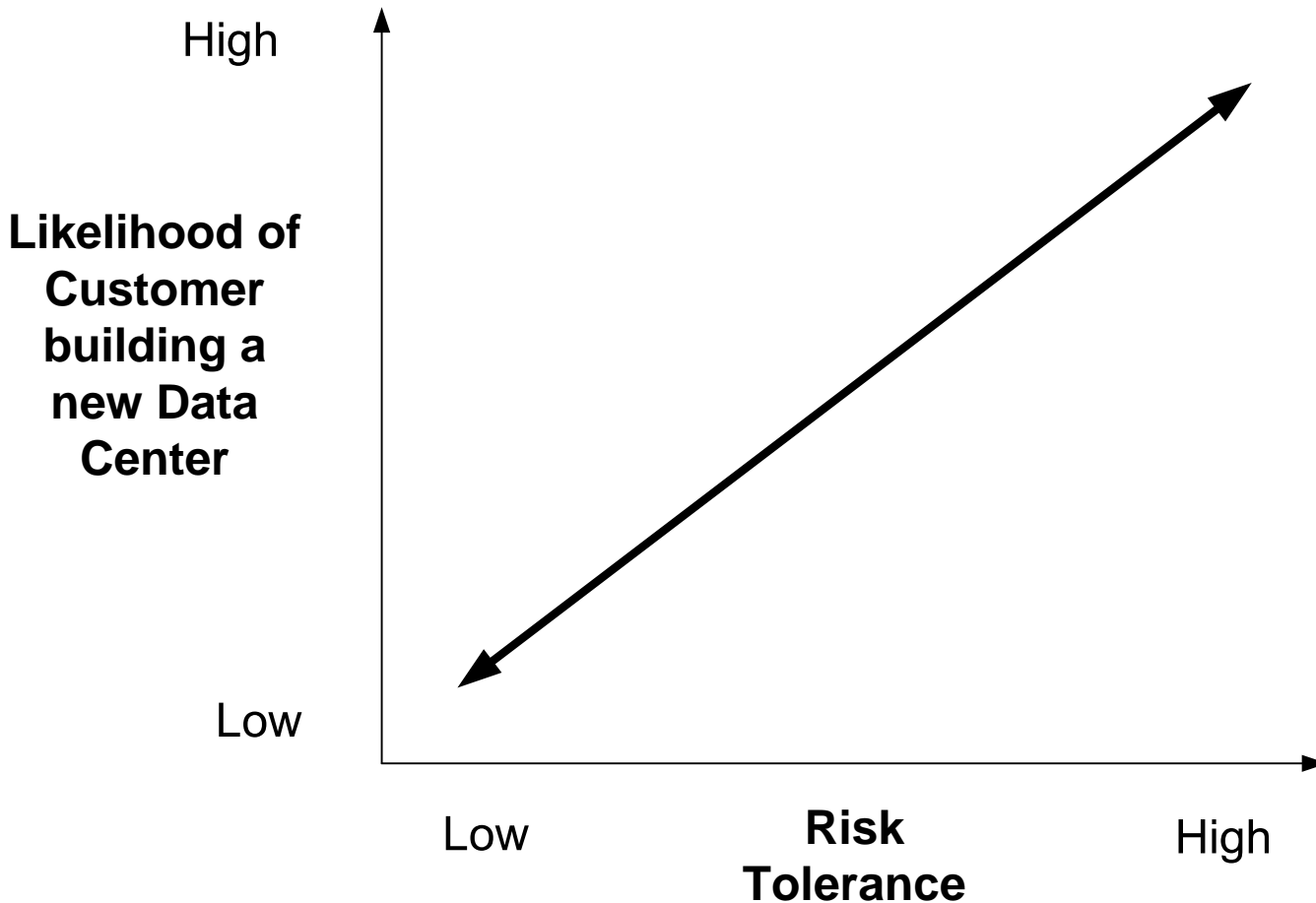
Reference: Enterprise Storage Group – “Data Center Consolidation and Construction Trends” June 2010

## Meet the Customers (Customer priorities according to ESG)

- **Server Virtualization**
- **Security Initiatives**
- **Data Center consolidation**
- **Upgrade Network Infrastructure**

**Reference: Enterprise Storage Group – “Data Center Consolidation and Construction Trends” June 2010**

## Meet the Customers - Risk/Reward (according to ESG)



**Concept: Enterprise Storage Group – “Data Center Consolidation and Construction Trends” June 2010**

## Solutions for simplifying storage provisioning

Protocol	Trend in Server Virtualization	Trend in Private Cloud
FC	Decreasing	??
FCoE	Flat	??
iSCSI	Increasing	??
NAS	Increasing	??

- Why is FC decreasing?
  - FC/FCoE are perceived as harder to use
  - Administrators must perform 2x the number of administrative tasks when compared to iSCSI and NAS
  - Performance of the Alternatives is “good enough”
  - NFS with its VMWare support provides significant administrative efficiencies in large scale storage management.
- Cloud
  - Requires a dynamic network and automation in order to function properly
  - No reason to believe that Customer attitudes will differ from Server virtualization environments

# The Storage provisioning process

## Fibre Channel / FCoE

1. Configure Switch ports (FCoE only)
2. Attach hosts and storage to Switch ports
3. Perform Fabric zoning
4. Provision storage

## iSCSI

1. Attach hosts and storage to Switch ports
2. Provision storage
3. Point server at storage port

## NAS

1. Attach hosts and storage to Switch ports
2. Provision storage
3. Point server at storage port

## Conclusions

- **FC/FCoE will continue to be replaced by iSCSI and NAS in Server Virtualization and Cloud environments unless something is done to address end user concerns about complexity**
- **Storage provisioning is the Least Common Denominator in all 4 protocols.**
  - In other words since storage provisioning has to be done in all three protocols, performing storage provisioning will not be seen as something that is specific to FC/FCoE...
- **Allowing the FC portion of the network to automatically configure itself rather than force the user to essentially input the information twice seems like an easy way to address user concerns.**

## Solution elements

- **It's OK to make significant changes**
  - Customers who are building new data centers are also moving forward with new technologies
- **Don't break existing Customer work flows**
  - FCoE does a good job here
- **Play to strengths**
  - FC/FCoE are network centric
  - iSCSI/NAS are end device centric
  - FC/FCoE are considered to be relatively secure
  - Performance
- **Allow storage ports to publish a list of peer devices that switches will use to restrict access**
  - Zoning is a good thing, Zoning administration is not!

## Solution requirements

- **Allow an N\_Port to provide information to the fabric that defines the WWPNs of the other N\_Ports (peers) that should be able to access it.**
  - The list of WWPNs should be provided via a registration of some kind
- **The Switch will create zones that allow the peers in the registration to access the device that performed the registration**
  - If an N\_Port registers a new list that contains fewer peers, zoning will have to be modified accordingly
  - Manual zoning takes precedence
- **Due to the above requirement, each zone created by the switch in reaction to peers being registered, will have to be tagged**

## Solution requirements

- **N\_Ports must be able to indicate if they do not want to receive frames from N\_Ports that they did not register**
- **Above requirement requires a “don’t talk to me unless I say so” bit**
  - The state of this bit must be remembered by the switch for every port
- **The final solution can not FC-4 specific**
- **N\_Ports should not be required to have knowledge of zone names, zone configurations, etc.**

A potential solution (for example)

- **A potential target implementation:**
  1. **FLOGI with NSSB bit set to one.**
  2. **RPD\_PN (with “don’t talk to me unless I say so” bit set to one )**
  3. **SSE**