

The On-Demand/Utility Data Center Optimizing the Economics

Robert S. Schafer

Research Analyst & Advisor • Consultant • Speaker • Author

RobtSchafer@gmail.com

Where We Are Today

- **Business speed & volatility growing**
- **Costs under excruciating scrutiny**
- **Business and IT conundrum:
Balancing agility vs. cost**
- **The business is demanding IT costs be dynamically aligned to demand, but ...**
- **Increasing OD/Utility skepticism:**
 - Tastes great! Less filling!
 - Where's the \$\$ beef?

The Key Questions

- 1. The OD Business Case?
Timing is Everything*
- 2. Where is the
Infrastructure Balance*
- 3. So ... Who's Doing It?
Case Studies*

What should the User do?

- *Key Skills/People*
- *Vendor Landscape*
- *Financial Realities*

Adaptive/On-Demand/Utility Computing Current Environment

● The hype

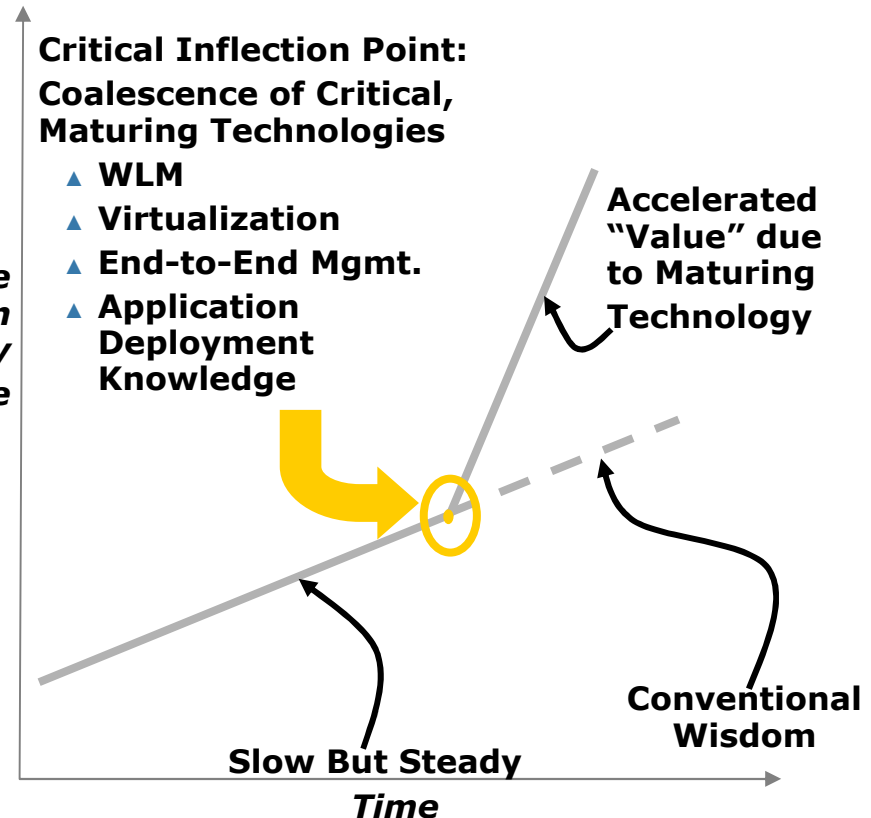
- Flexibility/agility
- Variable costs in both directions
- Inferred ... lower cost

● The reality

- Economic business case still elusive
- Capital expenditures are unavoidable
- Variable costs (and benefits)
yet to be quantified

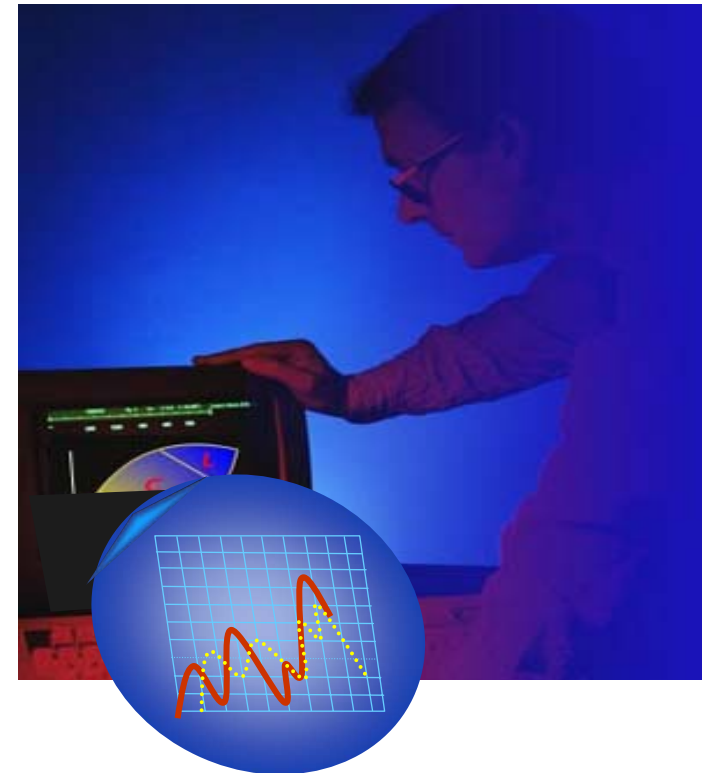
*Adaptive
Organization
Functionality
Value*

Technology Driving Inflection



The Business Case: Timing Is Everything

- **Adaptive/On-Demand-Utility:
The Piece Parts**
 - What's New ... What's Not?
- **The OD/Utility Business Case
Must Include the Business**
 - OD Timing & Risk
 - Enabling Higher Risk/Reward
Projects?
- **OD Candidate Characteristics**



Clearly defining On Demand's scope and timeline will be key elements to a credible business case

Adaptive/On-Demand/Utility The Piece Parts

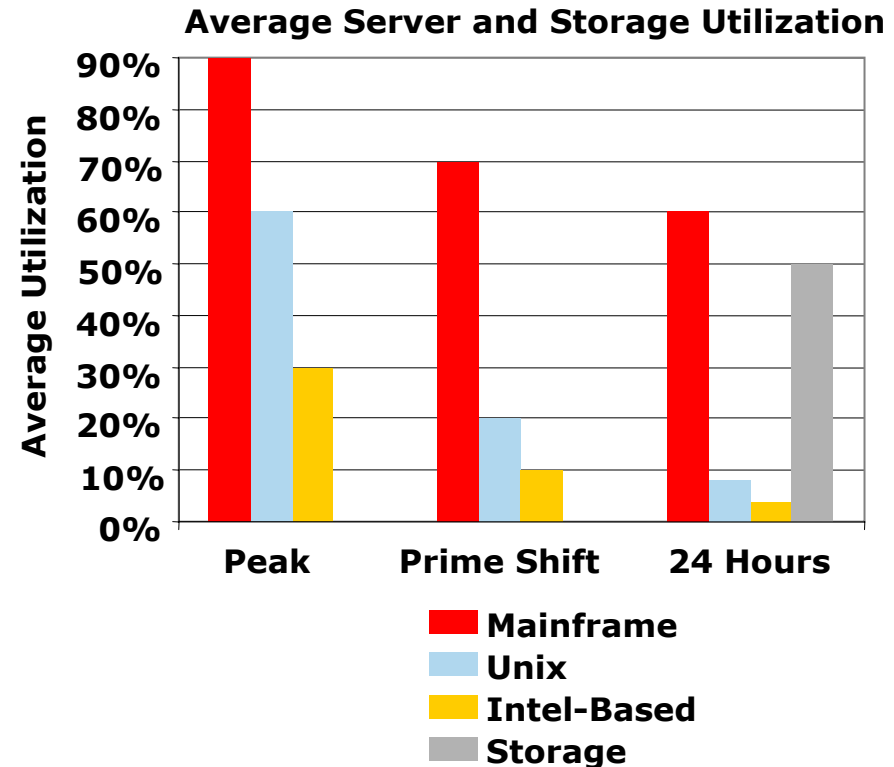
● What's *not* new?

- Virtualization
- Consolidation
- Provisioning
- Policy-based management
- Capacity-on-demand

● What *is* new?

- On/off procurement, but ...
- Holistic virtualization (5-7 years)
 - Spans server, storage, network

Harvesting Underutilized Fixed Assets



*On Demand's business benefits have never been in question;
On Demand's economics have never been proven.*

The OD Business Case Must Include the Business

Infra. & Asset Mgmt. Benefits

- Variable infrastructure
- Software pricing by workload
- On/Off Capacity
- IT infrastructure optimization

Business Benefits

- Agility
- Competitive edge
- Time-to-market
- Quality

- Variable procurement alone will not justify the OD
- OD economic foundation : Business benefit
- OD business case must be holistic & positive

***On Demand/Utility Computing is not about
saving money, but about making money***

Can a More Adaptive Organization Facilitate Higher-Risk/Reward Projects?

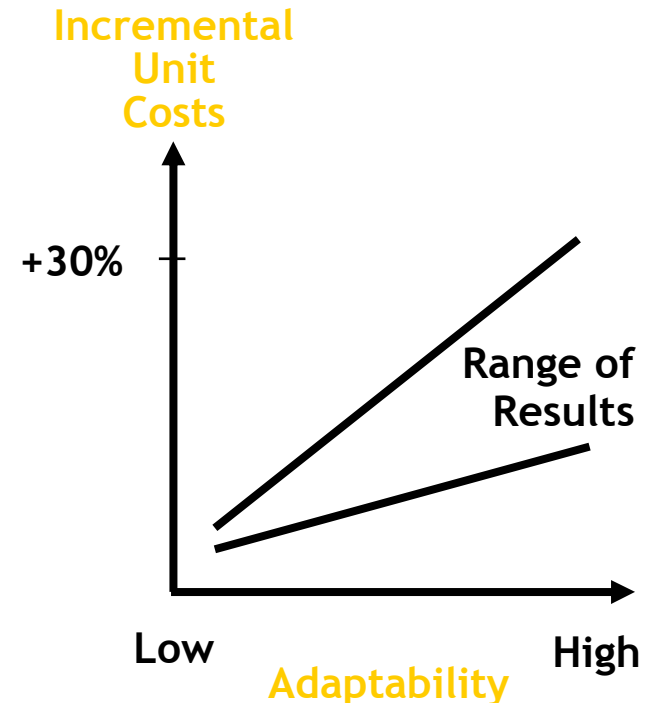
● Theory

- On Demand's variable infrastructure
 - Can lower risk threshold
 - Can enable projects with greater risk/benefit characteristics
 - Minimizes risk of “leftover” infrastructure and costs

● Practice

- Large, high-growth users can often absorb excess infrastructure
- Risk transfer to vendor will be costly (rental model)

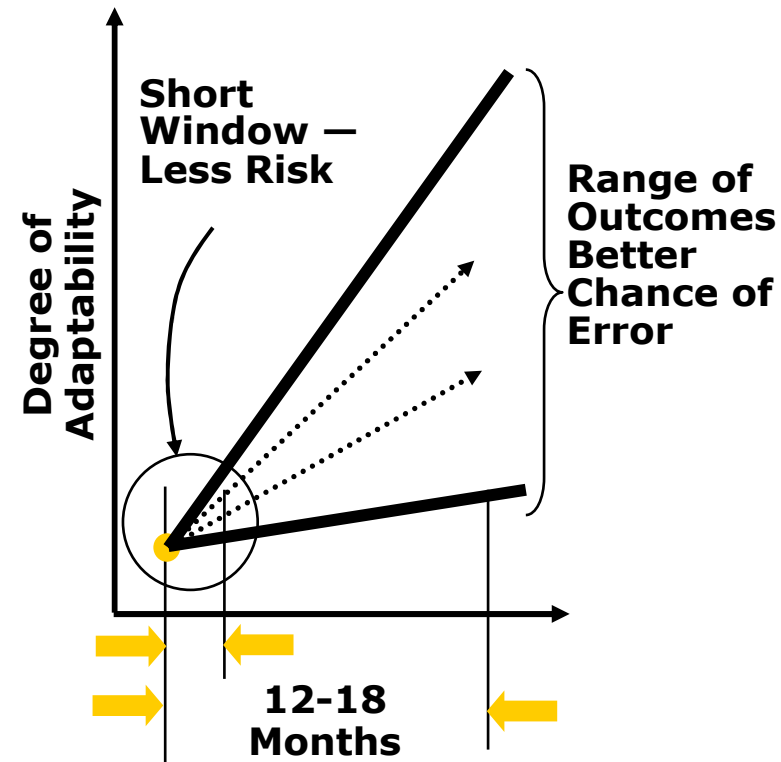
*Financial Reality
Flexibility Costs Money*



Timing & Risk are Everything

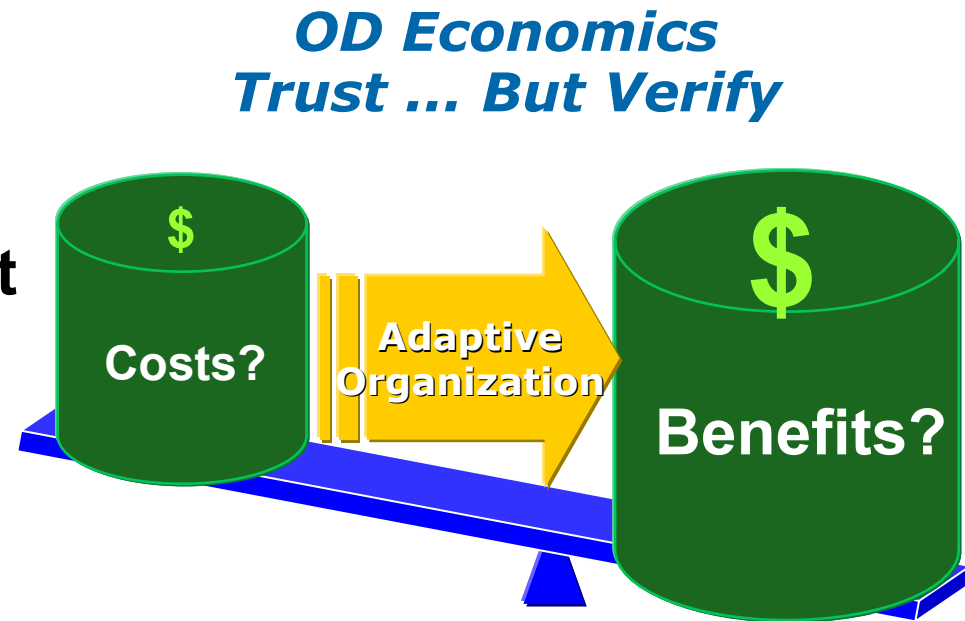
- The longer the term of the ROI, the greater its risk
- ROI term of most OD-unique benefits: 3-5+ years out
 - e.g., Holistic mgmt. across servers, storage, network
- OD investment should be limited to components that have proven, near-term ROI
 - Consolidation
 - Virtualization
 - Automation

Looking at the Adaptability Crystal Ball



Finding the Balance: Stand-alone ROI

- The IT “Factory”
 - “Just-in-time” (JIT) procurement
- The OD’s Economic Sweet Spot: Drivers
 - Business growth
 - Volatility
- Caveat Software
 - For example ...

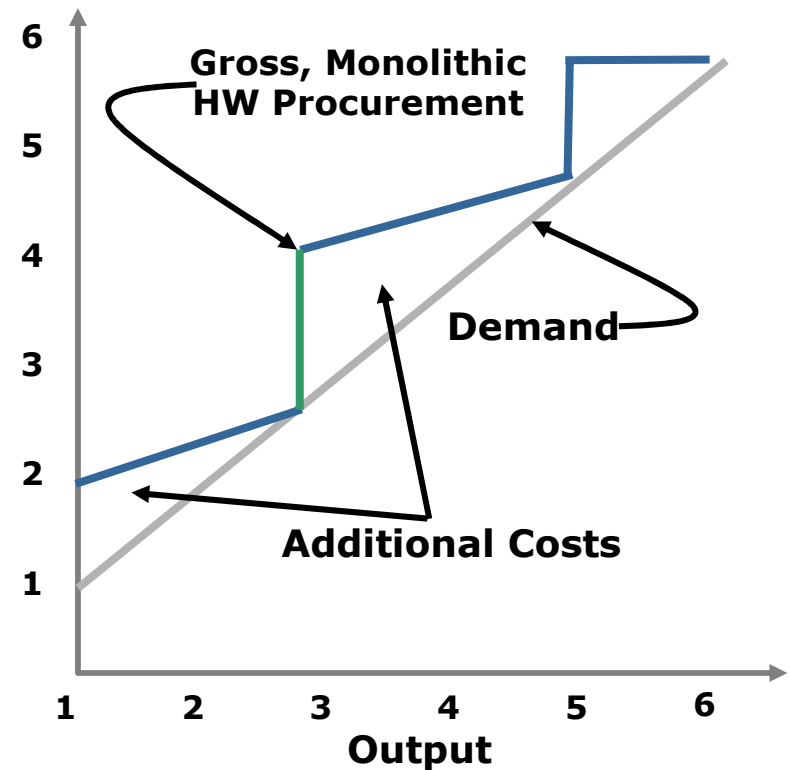


*Despite On Demand’s allure,
it can have an illusive ROI*

The IT “Factory”

- Think of IT as a continuous manufacturer
- Challenge to traditional manufacturing economics
- “Just-in-time” (JIT) procurement
 - IT costs flex with utilization
- In: Small, incremental infrastructure “bites”
- Out: Large, monolithic investments

More Granular Procurement Will Optimize Costs

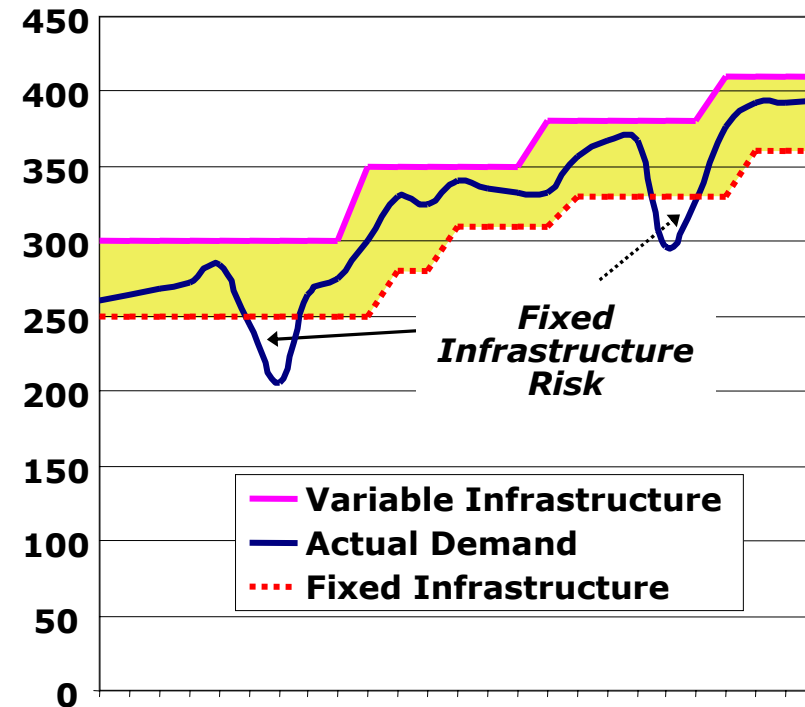


The adaptive organization will require smaller, incremental infrastructure building blocks

The Drivers: Business Growth and Volatility

- Growth: Economic sweet spot
 - Too high (e.g., >40%): “Self-insured”
 - ITO can do better itself
 - Too low (e.g., <5%): Flexibility not required
- Business volatility
 - Volatility can justify variable infrastructure’s premium
 - Poor candidates: ITOs with highly static, predictable workloads

Infrastructure Balance Variable vs. Fixed

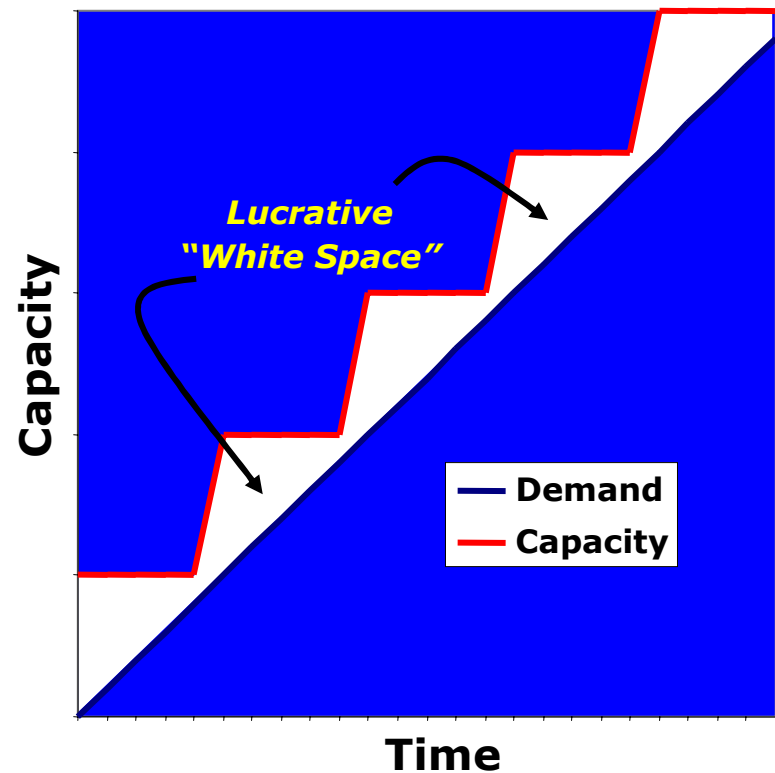


The economics of the adaptive organization will define candidate characteristics

Caveat Software: Squeezing Software's White Space

- ITOs traditionally buy software capacity ahead of consumption
- Software vendors more reluctant to adopt JIT
- Yet software has no marginal costs
- Make it up in volume = growth
- Hardware utility model must be synchronized with that of software

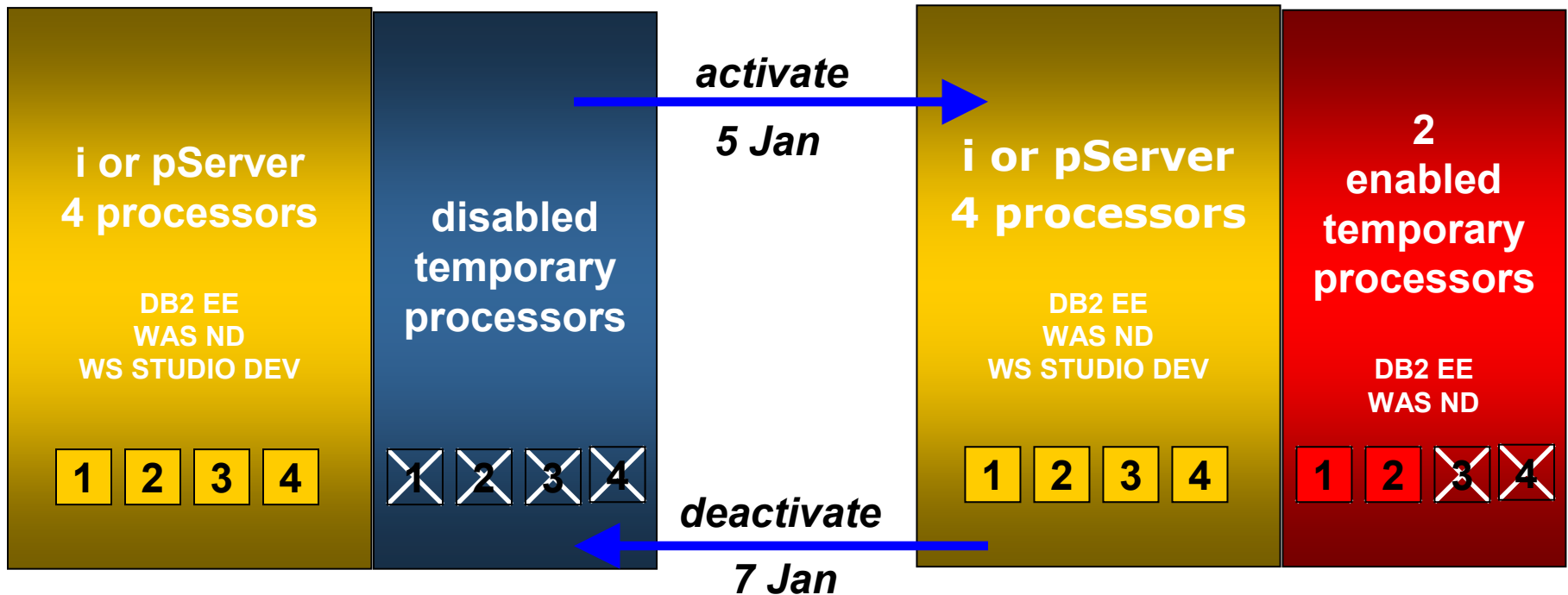
The "White Space" Model



ITOs must evaluate the software impact of an adaptive, utility-like hardware infrastructure

For Example...

Daily On/Off Capacity On Demand Software



User pays 2 processor days for DB2 EE.

WS Studio Developer is priced per user, thus no additional licensing required.

- DB2 EE @ \$604/processor-day = \$604 * 2 Proc-Days = \$1,208
- WAS ND @ \$254/processor-day = \$254 * 2 Proc-Days = \$508

Adaptive Storage

An Early, Creative Approach, but ...

- Large financial institution; >150TB Storage cap
- Challenges: Provisioning, config. & asset mgmt
- Solution: One size fits all: <\$100/GB, includes:
 - Rich software configuration
 - 5 years hardware & software maintenance
 - 25% annual price/capacity decline
 - Simplicity
- Results
 - Good news: Simple provisioning & management
 - Bad News: Overpaid by ~30%

WANTED: A Credible Adaptive/Utility/On Demand Business Case

What Key OD Skills/People are Required?

On Demand's Missing Links

- **Trad'l. Model:** IT-centric skills rule
 - Required: IT staff must be technical
 - Optional: Business & comm. skills
- **The Gap:** Holistic, flexible view
 - Business skills
 - Interpersonal/communication skills
- Req'd of more than just high-level IT
- Must become pervasive thruout rank & file
- Not either/or: Must be cumulative

**Trad'l.
Model**

Traditional
Technical
Skills



**New
Model**

Technical
Skills

Business
Skills

Pervasive &
Effective
OD Skills

Communications
Skills

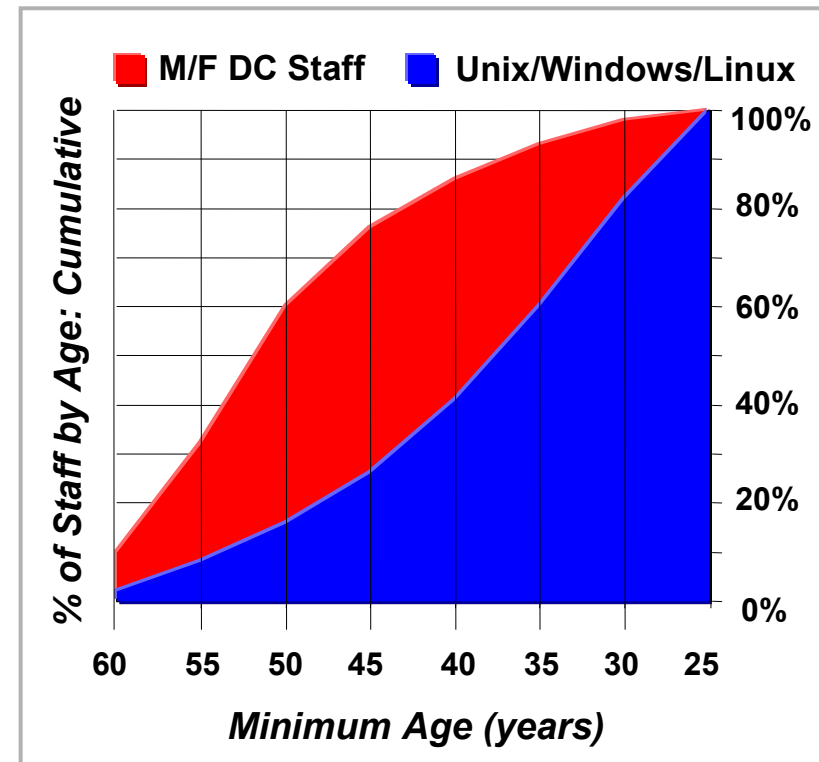


***Without balanced, holistic skill sets,
the On Demand/Utility business case will falter***

All Skills Shortages Are Not Created Equal

- 60% of G2000 MF data center staff: ≥ 50
 - vs. <20% of Unix/Windows/Linux staff
- Compounded by
 - Disproportionate attrition/retirement
 - No new blood
- Forewarned is forearmed:
Tools to lessen the pain
 - Automation
 - Cross-training
 - Specialized incentives
 - Sourcing strategies

Mainframe Data Center's Aging Demographics



ITOs must drive the IT skill "center of gravity" toward a cross-trained blend of MF & open-systems skills, while leveraging those skills via automation & selective outs'g.

Vendor Landscape For Example ...

● IBM

- Software: WLC
- Mainframe: On/off capacity
- Total usage financing

● HP

- Utility Data Center and Opsware
- Projected savings
 - Hardware, software, personnel

● EMC Open Scale

- Matrix of HW & SW configurations
- Variable (+ & -)
 - Performance, capacity, functionality
 - ... and price
- Financing: On/off balance sheet
- Automated billing

*EMC Open Scale
Mix and Match ...
But at What Price?*

\$10/GB	\$9/GB	\$8/GB
\$7/GB	\$6/GB	\$5/GB
\$4/GB	\$3/GB	\$2/GB

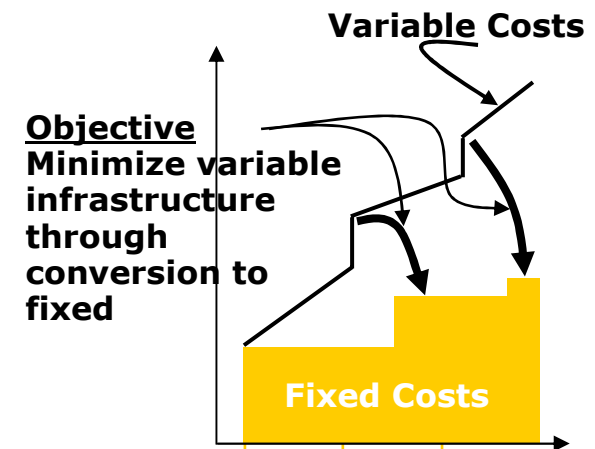
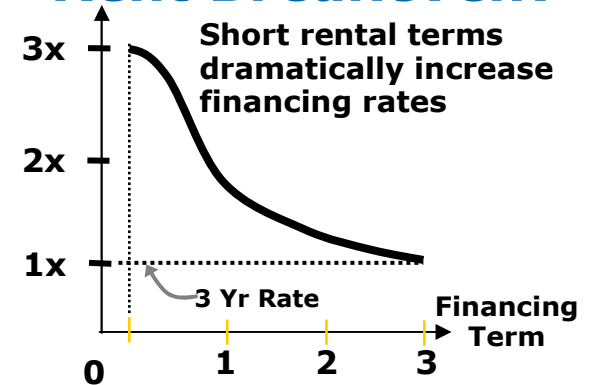
*Vendors' utility/on-demand offerings –
long on technology, short on demonstrated ROI*

Financial Realities

Build the Business Case

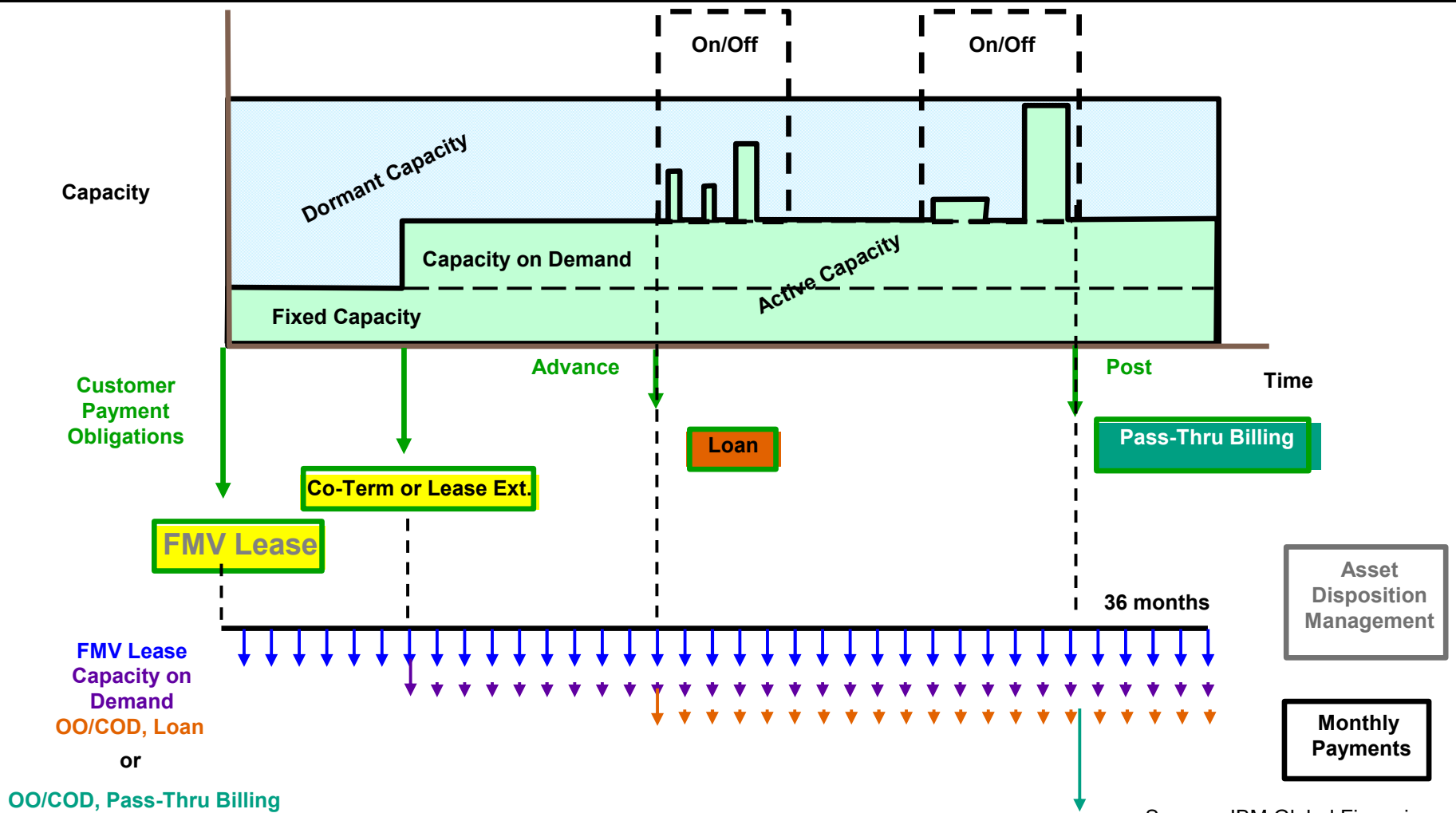
- Model the past, present, and future
 - Existing procurement methods (BAU)
 - Adaptive organization cost model
- Create sensitivity cases: High/low/median
 - What if ...
 - Variable → Fixed faster than expected?
 - Duration of variable capacity increases?
 - Variable qty. larger/smaller than expected?
 - Where's the buy (fixed) vs. rent (variable) breakeven point?
 - Exploit vendor relationships and economies of scale

Where's the Buy vs. Rent Breakeven?



ITOs must exploit existing asset management tools to control/limit OD costs

Financial Realities Smoothing the Lumps ... But No Free Lunch



The On-Demand/Utility Data Center

Optimizing the Economics

- The On Demand/Utility is about making money, not saving money
- Hard economics must support On Demand/Utility vision:
 - More qualitative than quantitative
 - More Business benefit than IT/Infrastructure savings
- Required:
 - A compelling business case ...
 - Not just compelling technology
- Build the business case around what's *real & now*
 - Variable infrastructure will cost more than fixed
 - Synchronize hardware utility model with software
- Don't forget the People
 - Effective OD/Utility will require pervasive business & commun. skills

ITOs must first understand/quantify:

- Existing cost structures
- Business growth rates and degree of variability