



Update on Desktop Virtualization at MCC

**A Key Part of the 2013-2016
Technology Master Plan**

▶ **A Look Back:**

- Why did we launch a Desktop Virtualization Strategy back in 2011?

▶ **Progress To-Date**

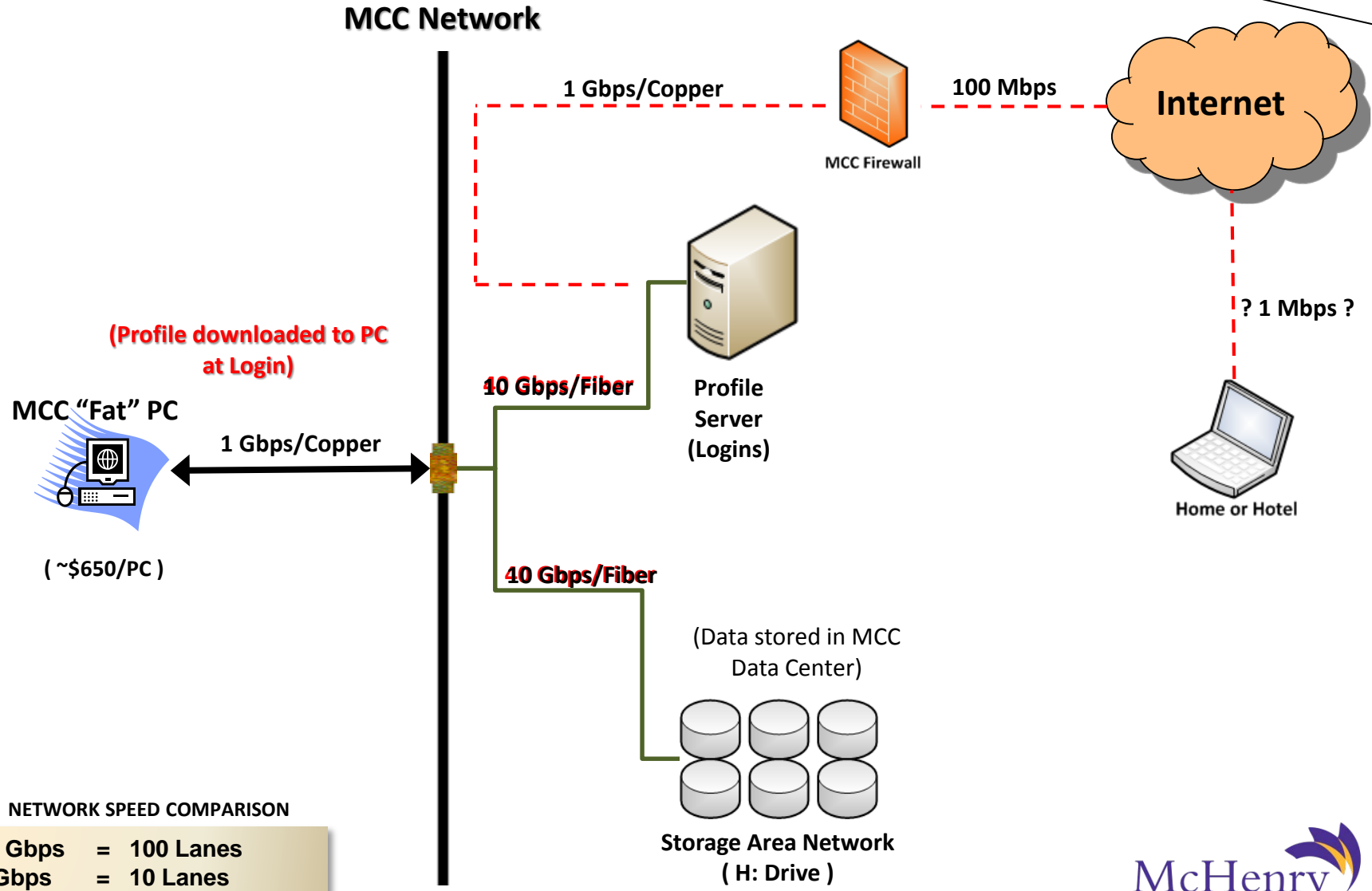
▶ **Where do we go from here?**

In 2010:

- **Escalating number of desktop computers leased year after year:**
 - 2009: 360 units
 - 2010: 454 units
 - 2011: 590 units (Includes 135 Thin Clients: *Desktop Virtualization Begins*)
 - 2012: 410 units (Includes 100 Thin Clients)
 - 2013: 668 units (Includes 200 Thin Clients)
 - 2014: 459 units (No Thin Clients added)
- **Poor ability to securely access MCC work data remotely**
 - Use of flash/thumb drives to transport files to/from campus
- **Increasingly long login times**
 - Often 5+ minutes in the classroom
- **Increasing IT administrative overhead due to growing numbers**
- **Increasing energy/power requirements**

Current MCC Desktop Computing Architecture

Presented at the
12/11/2012
Committee of the
Whole



NETWORK SPEED COMPARISON

10 Gbps	=	100 Lanes
1 Gbps	=	10 Lanes
100 Mbps	=	1 Lane

New Virtual Desktop Computing Architecture

Presented at the
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3-Year Implementation =
30% – 40% penetration
(450 – 600 workstations)



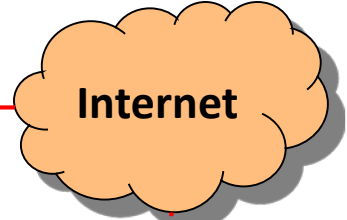
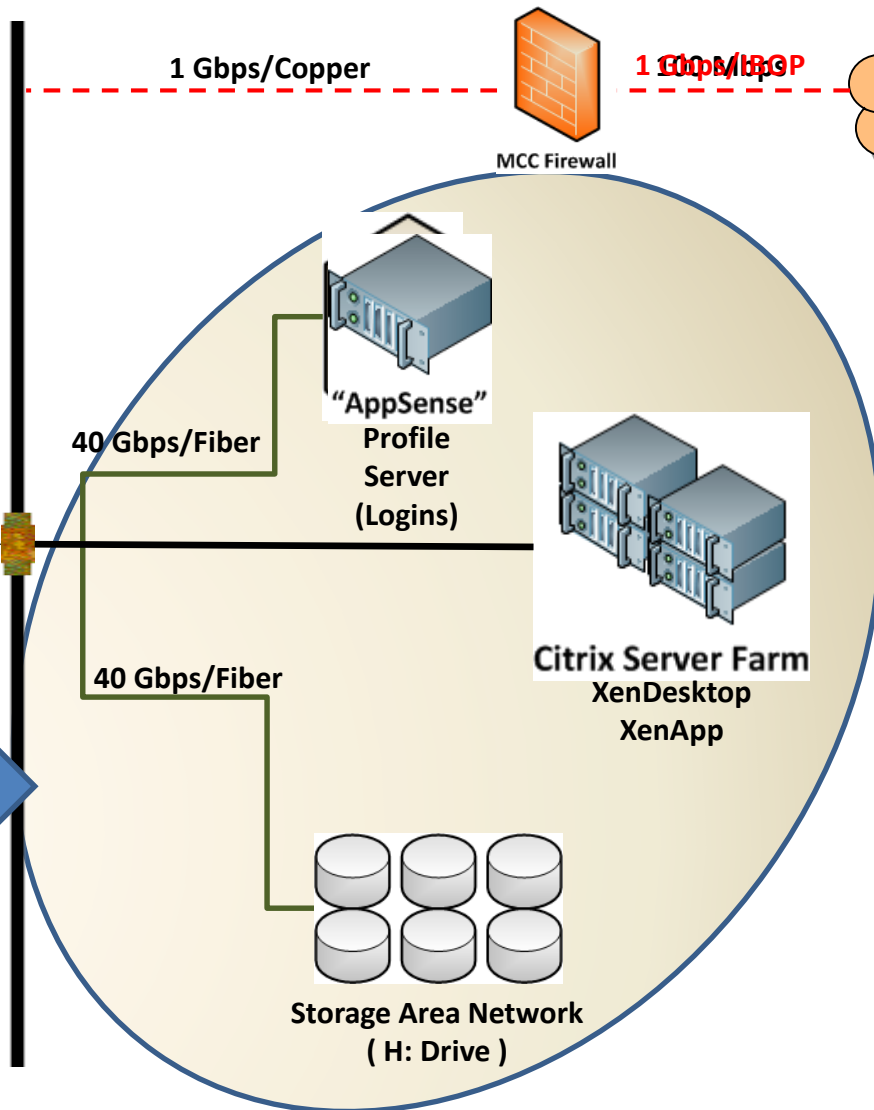
Thin Client
(~\$259)
(8-10yr MTBF)
(78% Energy Savings)

1 Gbps/Copper



Investment
Transfer

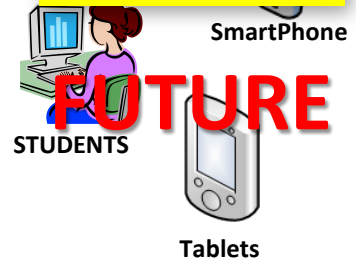
MCC Network



Internet

? 1 Mbps ?

"Streaming" software applications to any device, anywhere/anytime



FUTURE

NETWORK SPEED COMPARISON

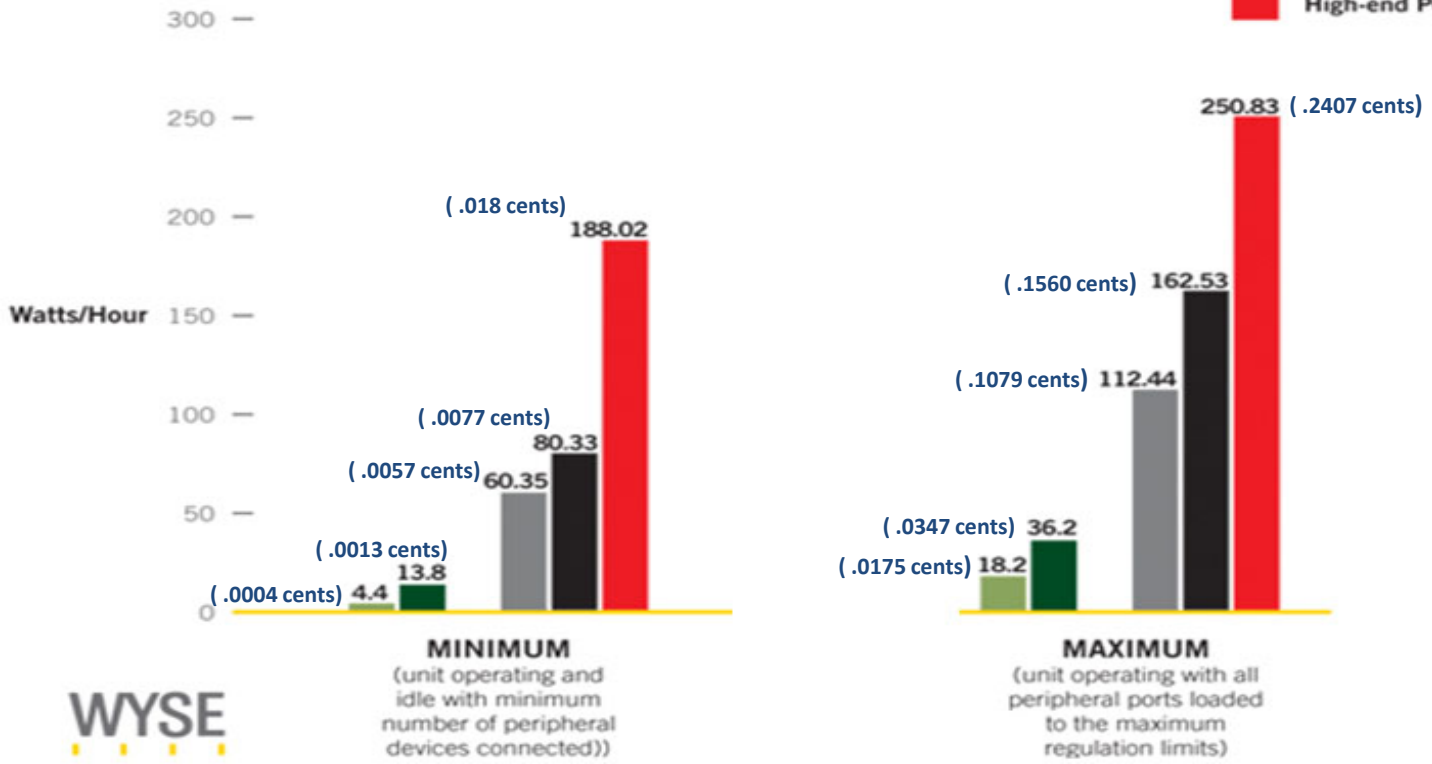
- 10 Gbps = 100 Lanes
- 1 Gbps = 10 Lanes
- 100 Mbps = 1 Lane

“Fat” Clients versus Thin Clients

Presented at the
12/11/2012
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Power Consumption Data

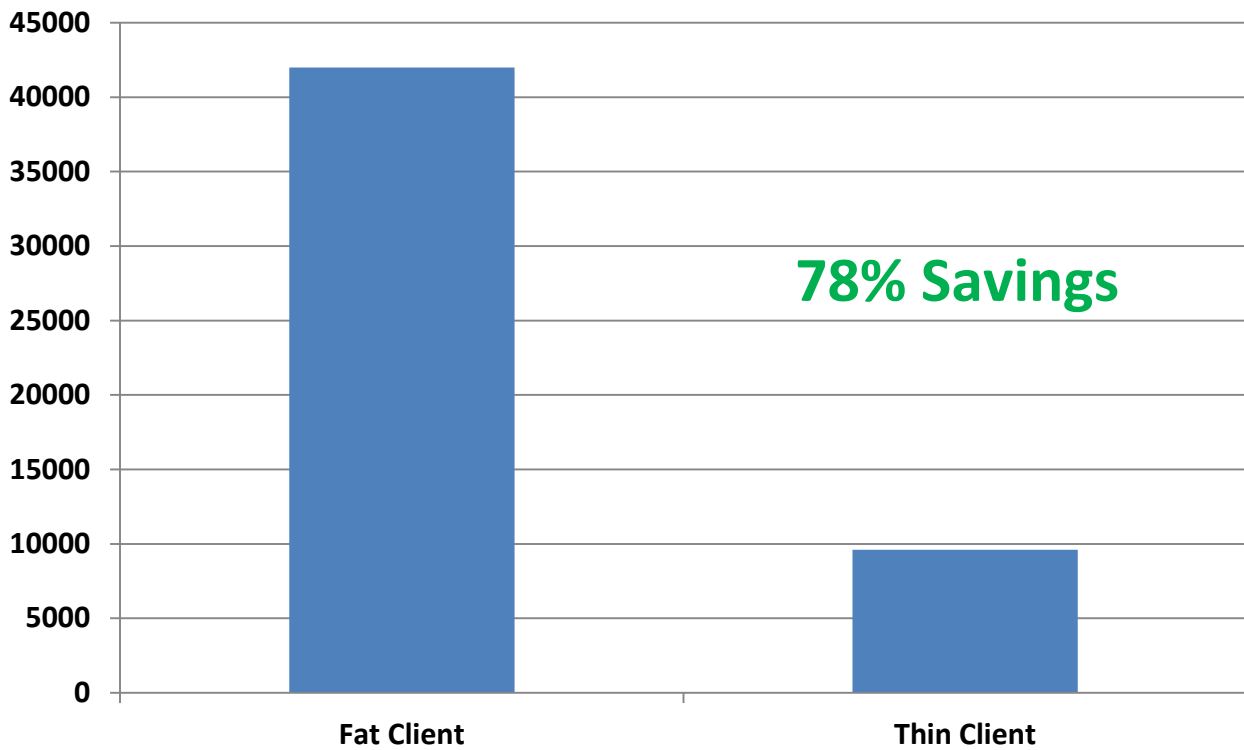
- **S Class Thin Client**
Smallest, most economical model
- **V Class Thin Client**
Most powerful model
- **Low-end PC**
- **Mid-range PC**
- **High-end PC**



“Fat” Clients versus Thin Clients

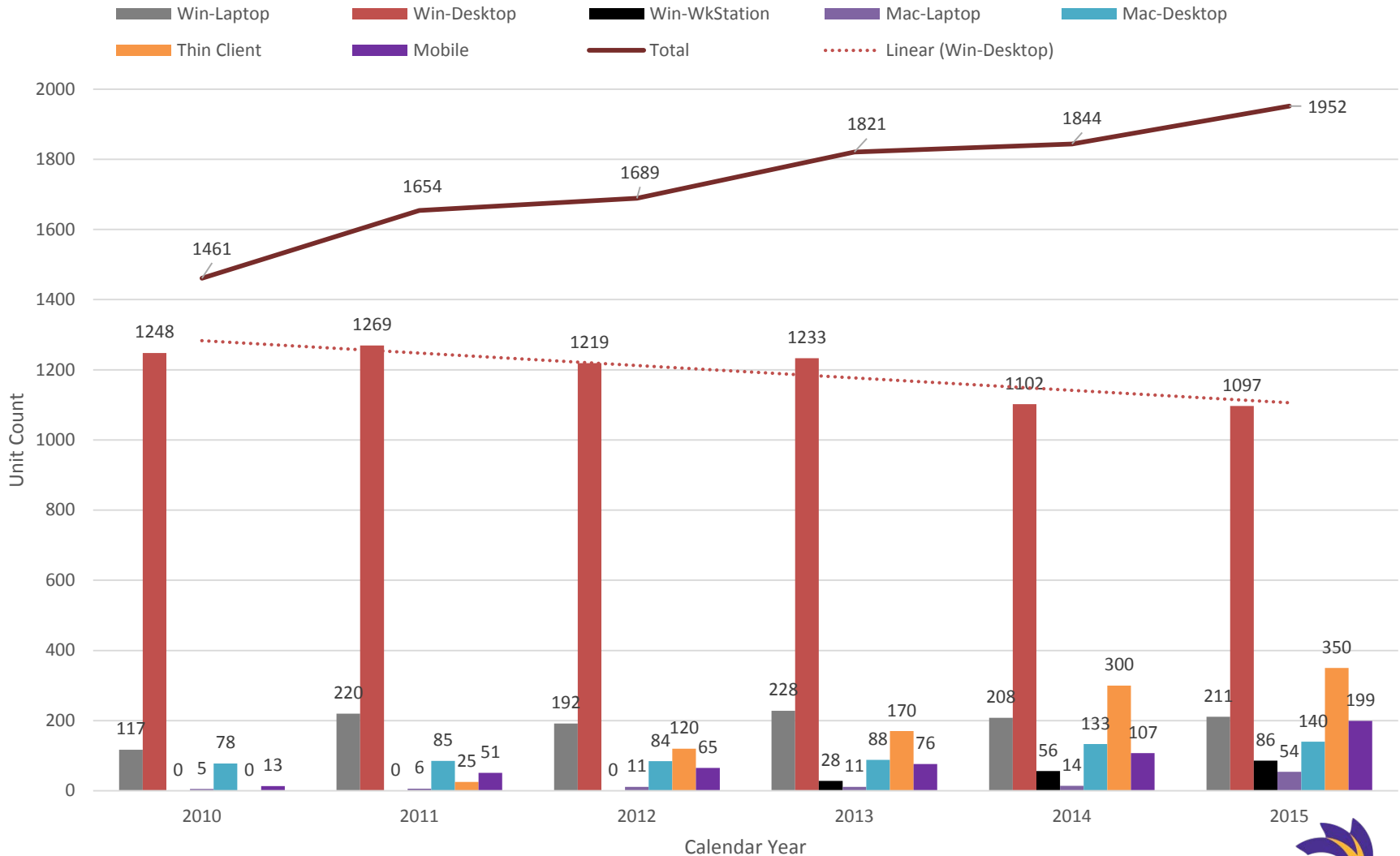
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Power Consumption (KWH per Year)
12 Hours/Day * 200 Days/Year * 100 Computers



Total Client Workstations at MCC

Supported Clients in a Given Year by Client Type (2010 - 2015)



Why Have Total Client Workstations Grown?



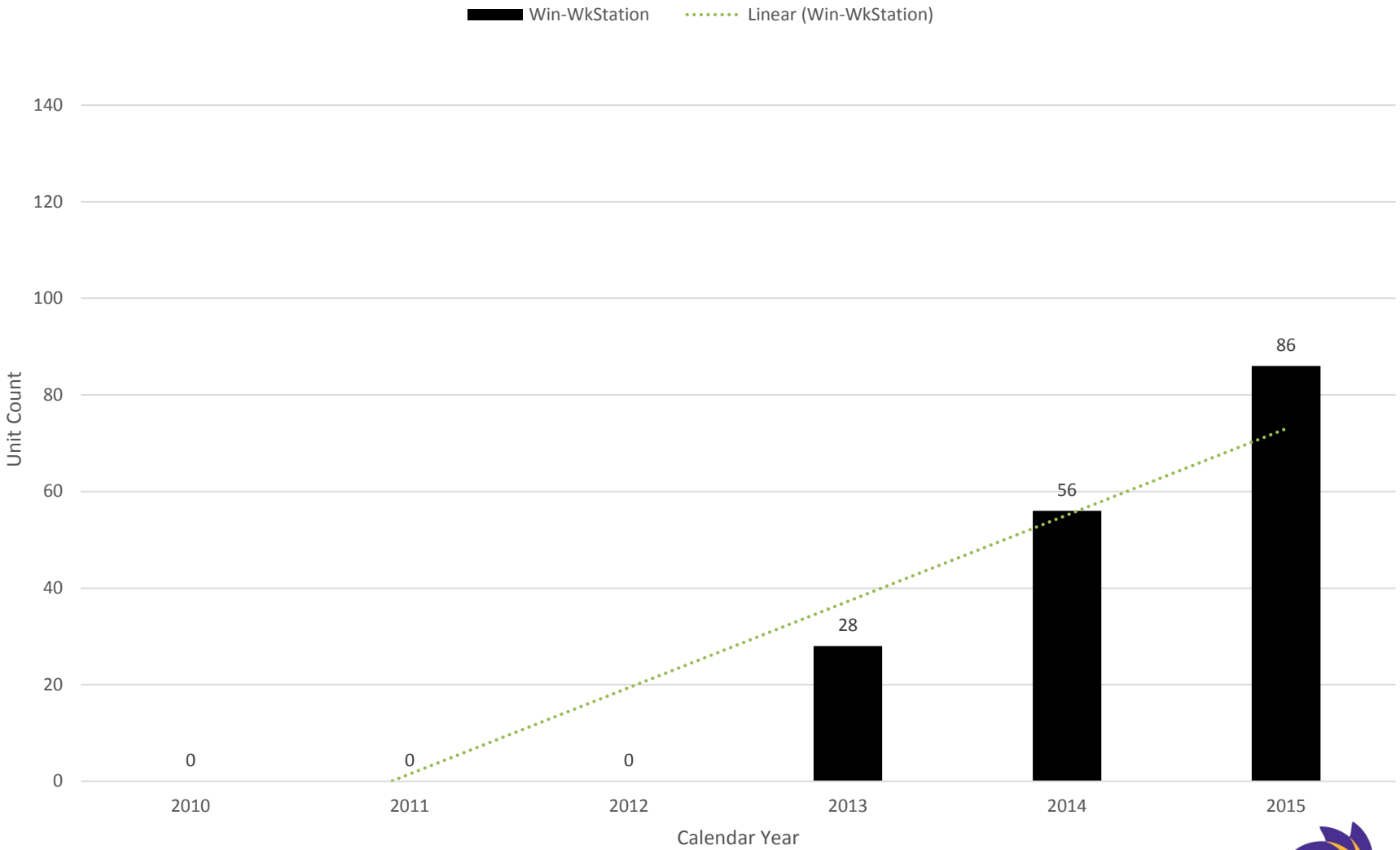
Mac Client Footprint (2010 - 2015)



Why Have Total Client Workstations Grown?



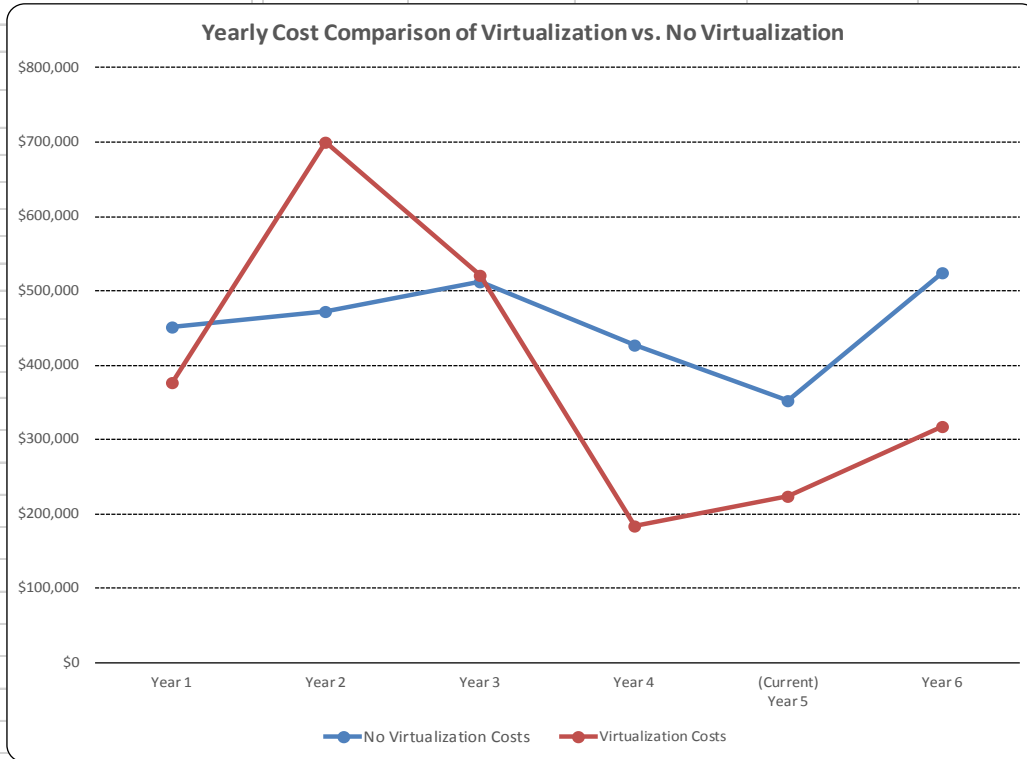
Windows Workstation Footprint (2010 - 2015)



Six-Year Cost Comparison

Six-Year Cost Comparison of Desktop Virtualization (DTV) Strategy vs No Virtualization - SUMMARY

	Year 1	Year 2	Year 3	Year 4	(Current) Year 5	Year 6	6-Year Total Cost	6-Year NPV
Cost of No Virtualization	\$451,629.90	\$472,330.10	\$512,751.48	\$426,905.99	\$353,167.05	\$524,766.00	\$2,741,550.52	\$2,523,611.50
DTV Strategy Costs	\$377,362.56	\$700,038.23	\$521,641.32	\$183,087.00	\$224,094.00	\$317,747.00	\$2,323,970.11	\$2,161,200.72
DTV Strategy Includes These Annual Power Savings:	-\$22,113.00	-\$38,493.00	-\$71,253.00	-\$71,253.00	-\$71,253.00	-\$71,253.00	-\$345,618.00	Total 6-Year Power Savings
							6-year Savings :	\$417,580.41
							6-year NPV Savings :	\$362,410.78



List of Costs in Calculations	
No Virtualization	Desktop Virtualization
Fat Client Purchases	Fat & Thin Client Purchases
Client Software Costs	Client Software Costs
Data Center Costs Include:	Data Center Costs Include:
Server Hardware	Server Hardware
Data Storage Hardware	Data Storage Hardware
Networking Hardware	Networking Hardware
Additional Labor Costs	

Thin Client vs Fat Client Power Savings Calculations

- Average Hours Used per Week
- Number of Weeks Used per Year
- Average Watts Used per Hour
- Annual Fat Client per Unit Electrical Cost
- Annual Thin Client per Unit Electrical Cost

Other "Soft" Benefits of Virtualization

- Greater flexibility to deploy clients anywhere, anytime
- Reduced IT administrative overhead
- Quicker support response times
- Lower labor costs