Dell PowerEdge VRTX

TCO Analysis and Business Value Report

Prepared for Test Customer

Date: February 23, 2016

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Project Overview

The Dell PowerEdge VRTX TCO tool explains the potential total cost of ownership savings and business value from implementing Dell PowerEdge VRTX. The calculator collects information about your current computing environment and maturity of the organization, and quantifies the potential cost reductions. This total cost of ownership (TCO) analysis was created specifically for Test Customer, on February 23, 2016.

The expected benefits provided are based on Dell PowerEdge VRTX, which is instrumental in addressing the challenges that the enterprises are facing in efficiently fulfilling the systems management needs of increasing needs of users. Dell PowerEdge VRTX brings order to office IT chaos, redefines IT operations and allows users to deploy performance anywhere. PowerEdge VRTX is a fully integrated, scalable and easy-to-manage solutions platform optimised specifically for office environments. It integrates up to four PowerEdge M-Series server nodes featuring Intel® Xeon® processors, storage, networking and management in a single chassis. The recommendations are only for comparison purposes, and should not be used in place of more thorough sizing efforts. All the environment data is based on the inputs provided by Test Customer

Dell PowerEdge VRTX features

- Powerful: Up to four PowerEdge server nodes
- Small: The size of a tower server, just 12" x 19" and about 175 pounds
- Installation flexibility: Deskside or rackable
- Plenty of storage: Up to 48TB of storage with 12 x 3.5" or 25 x 2.5" hot plug hard drives
- Fast networking: Eight 1Gb Ethernet ports or optional 1GbE internal switch module
- Fully expandable input/output: Eight PCIe slots (three full height/full length and five low profile/half length)
- High availability and reliability: Redundant power supplies and fans
- Office-level acoustics and power: Standard 100V–240V AC power — just plug in the wall
- Simple, easy-to-use management: Manage servers, storage, networking and power with a unified tool, in a single console. It includes a modern user interface that is intuitive and easy to use, including rapid, at-a-glance identification of remote system locations and health status. .

Executive Summary

Choosing the Dell PowerEdge VRTX for Test Customer gives you the performance, scalability, and high availability you need to keep running and meeting increased demand. This analysis compares the total cost and benefits of implementing the proposed Dell PowerEdge VRTX Solution to the enterprise current environment over a period of five years.

From an investment perspective Dell PowerEdge VRTX Solution is expected to require a total investment of $137,320. It includes the Server Hardware cost comprising of External Storage chassis, Servers, Switches, Hard Drives and Cables. Comparing this investment with the total benefits of $109,078 from cost savings and improved service levels the Dell PowerEdge VRTX Solution is expected to yield a payback period of >60 months.

Financial Metrics	Values
Total 5 Year Cost	$137,320
Total 5 Year Direct Benefit	$109,078
Total 5 Year Indirect Benefit	$48,142
TCO savings over 5 years	42%
Payback period	>60 months

Company Profile

What is the company name?*	Test Customer
Where is the location of the company?*	Slovakia
What is the primary industry?*	Other / Combination
What is the annual revenue for your organization?*	$250,000
What is the estimated annual growth rate?	10%
How many users access the servers?	30
Does this replace existing hardware or is this a net new hardware purchase?	Existing
Does the organization have single or multiple locations?	Single

Legacy hardware configuration

What is the server type?	Tower 2 socket
How many servers?	3
How many networking devices/switches?	2
How many external storage devices?	3
How many hard drives are there in an external device?	30

Main IT challenges

Complexity

√ Complexity due to disparate hardware

√ Proliferation and complexity of systems management tools

Inefficiency

√ System downtime for maintenance

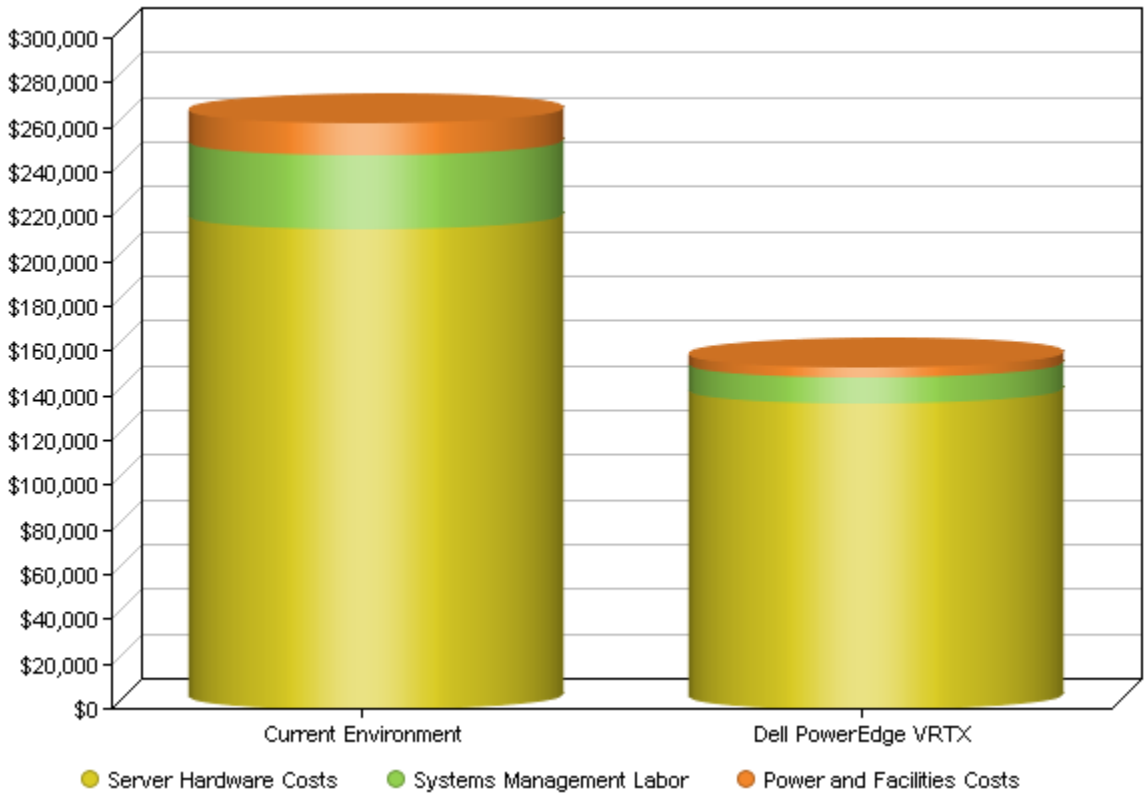
IT Rigidity

√ Insufficient scalability to handle performance spikes or support business growth

TCO Comparison

Comparing the proposed costs and benefits of the Dell PowerEdge VRTX Solution versus the As Is opportunities, it is projected that implementing the proposed solutions resulted in a TCO savings of over five year. A detailed cost comparison on categorical basis between the current environment and the proposed environment is as follows:

TCO Comparison



The above chart shows the comparison of direct costs under Current (As Is) Environment and Dell PowerEdge VRTX Environment.

Direct Costs over 5 Years	Current Environment	Dell PowerEdge VRTX	Savings over 5 Years	
Server Hardware Costs	$214,878	$137,320	$77,559	36%
Systems Management Labor	$32,980	$11,545	$21,435	65%
Power and Facilities Costs	$14,248	$4,164	$10,084	71%
Total Directs	**$262,106**	**$153,029**	**$109,078**	**42%**

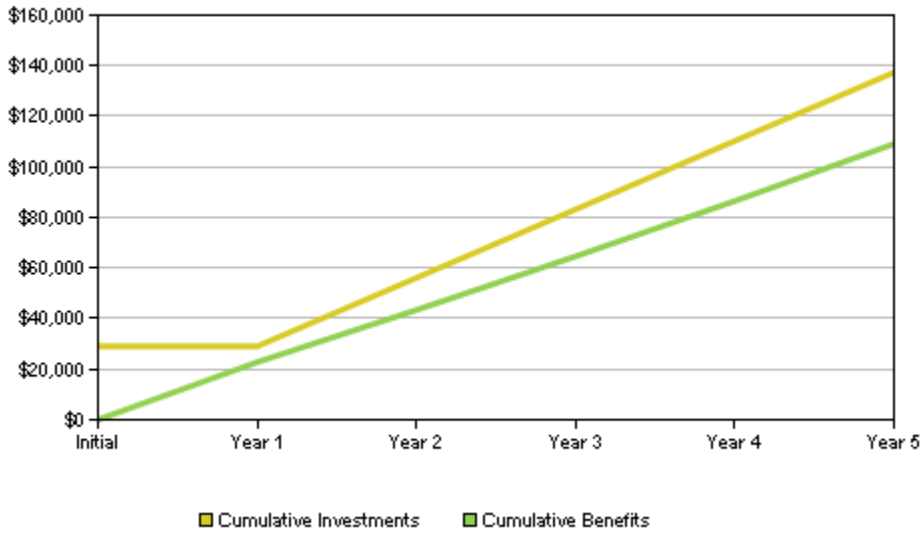
The details on each direct cost item can be found in the appendices.

Return on Investment Analysis

From an investment perspective Dell PowerEdge VRTX Solution is expected to require a total investment of $137,320. It includes the Server Hardware cost comprising of External Storage chassis, Servers, Switches, Hard Drives and Cables. Comparing this investment with the total benefits of $109,078 from cost savings and improved service levels the Dell PowerEdge VRTX Solution is expected to yield payback period of >60 months.

Server Hardware Costs	Cost Per Location	Quantity
Number of branch locations		1
External Storage Chassis	$8,562	1
Servers	$19,716	3
Switches	$4,334	2
Hard drives	$9,240	30
Cables	$206.00	26
Total	**$42,058**	

Break Even Analysis



The above chart show the point where the benefits exceed the costs designates the breakeven point, and the time from project start to breakeven designates the payback period.

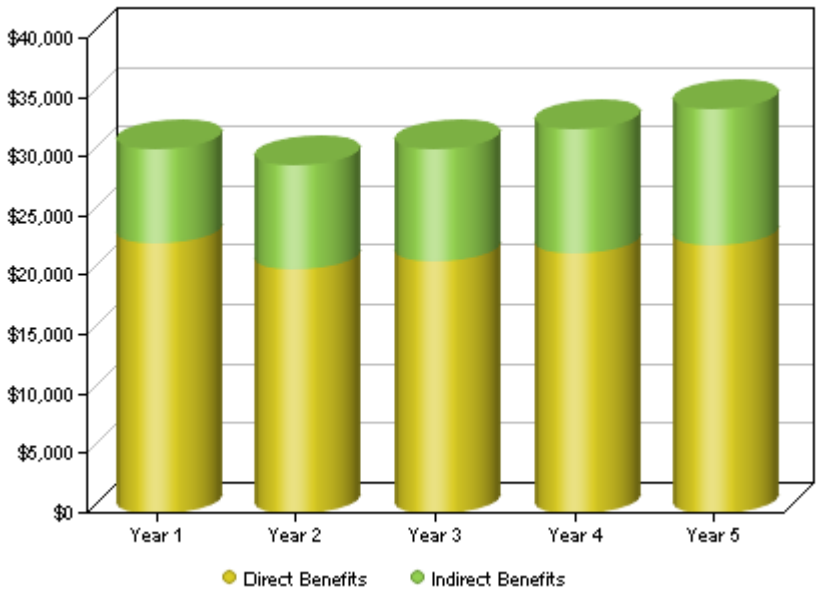
Dell PowerEdge VRTX Investment

Server Hardware Costs	Initial	Year 1	Year 2	Year 3	Year 4	Year 5	Total
New Branch locations		0	1	1	1	1	
Number of branch locations	1	0	1	1	1	1	4
Average price per RBO office	$42,058	$42,058	$42,058	$42,058	$42,058	$42,058	
Hardware Support Cost	$4,588	$4,588	$4,588	$4,588	$4,588	$4,588	
Annual ROBO location purchase costs	**$46,646**	**$0**	**$42,058**	**$42,058**	**$42,058**	**$42,058**	**$168,232**

The benefits of moving to Dell PowerEdge VRTX Solutions involve taking control from initial operating system deployment to hardware and software inventory, software deployment, asset management, endpoint security,

patch management and service desk functionality. The following chart and table summarizes benefits in quantitative terms.

Annual Benefits



The above chart shows the comparison of yearly total benefits.

Direct Benefits	Year 1	Year 2	Year 3	Year 4	Year 5	5 Year Total
Server Hardware Costs	$17,643	$14,979	$14,979	$14,979	$14,979	$77,559
Systems Management Labor	$3,456	$3,829	$4,242	$4,700	$5,208	$21,435
Power and Facilities Costs	$1,652	$1,817	$1,999	$2,198	$2,418	$10,084
Total Direct Benefits	**$22,751**	**$20,625**	**$21,220**	**$21,877**	**$22,605**	**$109,078**

Indirect Benefits	Year 1	Year 2	Year 3	Year 4	Year 5	5 Year Total
Business Agility - Productivity Impact	$5,023	$5,525	$6,078	$6,686	$7,355	$30,667
Business Agility - Revenue Impact	$2,055	$2,260	$2,486	$2,734	$3,007	$12,542
Unplanned Downtime - Productivity Impact	4.6 Hours	5.06 Hours	5.57 Hours	6.13 Hours	6.74 Hours	28.1 Hours
Unplanned Downtime - Business Costs	$568	$625	$688	$757	$833	$3,471
Planned Downtime - Productivity Impact	$0.00	$0.00	$0.00	$0.00	$0.00	321.15 Hours
Planned Downtime - Business Impact	$239	$263	$290	$319	$351	$1,462
Total Indirect Benefits	**$7,885**	**$8,673**	**$9,542**	**$10,496**	**$11,546**	**$48,142**

The details on each benefit item can be found in the appendices.

Next Steps

As illustrated, the Dell PowerEdge VRTX can provide significant savings.

To better understand how you can achieve the savings projections produced in this analysis contact your local Dell PowerEdge VRTX sales representative or Business Partner.

Learn more:

Dell PowerEdge VRTX

VRTX is the winner vs. keeping legacy server hardware

VRTX vs. Public Cloud; Check out how the VRTX beat public cloud cost.

APPENDIX

Server Hardware Costs

This worksheet projects the costs to maintain and grow the current server hardware infrastructure over the specified analysis period, and the costs to purchase, maintain and grow the Dell VRTX hardware over this same time period.

Average annual growth rate in computing requirements: 10.0%

Current per Server Environment - Summary

Server Hardware Costs	Cost Per Location	Quantity
Number of branch locations		1
External Storage Chassis	$8,562	1
Servers	$19,716	3
Switches	$4,334	2
Hard drives	$9,240	30
Cables	$206.00	26
Storage support	$1,103.25	1
Server support	$1,977.00	3
Switch Support	$1,508.00	2
Total	**$42,058**	

VS.

Future Environment with VRTX - Summary

Server Hardware Costs	Cost Per Location	Quantity
Number of branch locations		1
Dell VRTX Chassis	$4,733	1
Server	$12,490	2
Switch	Included	
Hard drives	$9,240	30
Cables	$9.00	3
VRTX support Cost (Annually)	$606.75	1
Server	$1,318.00	2
Switch	Included	
Total	**$27,079**	

Server Hardware Costs	Initial	Year 1	Year 2	Year 3	Year 4	Year 5	Total
New Branch locations		0	1	1	1	1	
Number of branch locations	1	0	1	1	1	1	4
Average price per RBO office	$42,058	$42,058	$42,058	$42,058	$42,058	$42,058	
Hardware Support Cost	$4,588	$4,588	$4,588	$4,588	$4,588	$4,588	
Annual ROBO location purchase costs	**$46,646**	**$0**	**$42,058**	**$42,058**	**$42,058**	**$42,058**	**$168,232**

Future Server Environment - Summary

Server Hardware Costs	Initial	Year 1	Year 2	Year 3	Year 4	Year 5	Total
New Branch locations		0	1	1	1	1	
Number of branch locations	1	0	1	1	1	1	5
Average price per RBO office	$27,079	$27,079	$27,079	$27,079	$27,079	$27,079	
VRTX Hardware Support Cost	$1,925	$1,925	$1,925	$1,925	$1,925	$1,925	
Annual ROBO location purchase costs	**$29,004**	**$0**	**$27,079**	**$27,079**	**$27,079**	**$27,079**	**$137,320**
Annual hardware savings	**$17,643**	**$0**	**$14,979**	**$14,979**	**$14,979**	**$14,979**	**$77,559**

Systems Management Labor

This worksheet compares the systems management labor costs for the current environment versus the proposed Dell PowerEdge VRTX solution.

Systems Management Labor	Current work hours	Expected Savings	Proposed work hours	Average Annual Fully Burdened hourly salary	Annual Savings Year 1
Systems administrators	54.00	65.0%	18.90	$37	$1,306
Systems and backup operators	108.00	65.0%	37.80	$31	$2,150
Other (specify)	0.00	0.0%	0.00	$0	$0
Total	**162.00**	**65.0%**	**56.70**		**$3,456**

Average annual growth in systems management staff	9.8%
Average annual growth in systems management salaries	1.0%

Systems Management Labor	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Current- FTEs	162.00	177.88	195.31	214.45	235.47	985.11
Current FTE- annual labor costs	$5,317	$5,891	$6,527	$7,232	$8,013	$32,980

Proposed Implementation Costs (HW)	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Proposed (To Be) environment - work hours	56.70	62.26	68.36	75.06	82.42	344.80
Proposed (To Be) environment - annual labor costs	$1,861	$2,062	$2,285	$2,532	$2,805	$11,545
All other costs of Proposed Solution Implementation - FTEs	0.00	0.00	0.00	0.00	0.00	0.00
All other costs of Proposed Solution Implementation costs	$0	$0	$0	$0	$0	$0
Total proposed solution implementation - work hours	**56.70**	**62.26**	**68.36**	**75.06**	**82.42**	**344.80**
Total proposed solution implementation costs	**$1,861**	**$2,062**	**$2,285**	**$2,532**	**$2,805**	**11,545.00**
Annual savings - work hours	**105.30**	**115.62**	**126.95**	**139.39**	**153.05**	**640.31**
Annual savings - labor costs	**$3,456**	**$3,829**	**$4,242**	**$4,700**	**$5,208**	**$21,435**

Power and Facilities Costs

This worksheet projects the power consumption and costs for the servers and cooling requirements for the current environment and the Dell VRTX solution.

Measure space using (square feet or square meters) | Square Feet

Space Requirements	Current	Dell PowerEdge VRTX	Savings
Number of servers	3	2	1
Average square feet required per server	0.32	0.10	
Total server space requirements	**0.95**	**0.19**	**0.76**
Average annual cost per square foot of space	$62.50	$62.50	
Total annual costs for space (year 1)	**$59**	**$12**	**$47**

Power and HVAC Requirements	Current	Dell PowerEdge VRTX	Savings
Number of servers	3	2	1
Switch	2	0	2
External storage	1	0	1
Average power consumption per server (Watts)	314	198	116
Average HVAC consumption per server (Watts)	282	178	104
Average power consumption per switch (Watts)	110		110
Average power consumption per external storage (Watts)	729	729	0
Total hourly power and HVAC consumption (Watts)	**2,554**	**752**	**1,802**
Annual operating hours	8,766	8,766	
Annual power and HVAC consumption (kWatt hours)	22,388	6,592	
Average cost per kWatt hour	$0.1016	$0.1016	
Total annual power and HVAC costs (year 1)	**$2,275**	**$670**	**$1,605**

Average annual growth in computing resources (from Questionnaire) | 10.0%

Annual Facilities Costs	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Current annual facilities costs	$2,334	$2,567	$2,824	$3,106	$3,417	$14,248
Dell solution annual facilities costs	$682	$750	$825	$908	$999	$4,164
Annual savings in facilities costs	**$1,652**	**$1,817**	**$1,999**	**$2,198**	**$2,418**	**$10,084**

Business Agility - Productivity Impact

The Dell solutions can speed the provisioning and deployment of new applications saving IT staff labor savings.

Business Agility - Productivity Impact	Current Solution	Benefits with Proposed Solution	Potential Business Agility Impact for Proposed Solution
New hardware deployment projects per year	0.3		0
Average system provisioning time per hardware deployment (days)	45	50.0%	23
Average annual value in productivity improvement per branch location	$250,000		$250,000
Average lost productivity improvement value per hardware deployment	$30,822	$15,069	$15,753
Annual value of productivity losses due to hardware deployment	$10,274	$5,023	$5,251

Business Agility - Productivity Impact	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Current (As Is) costs	$10,274	$11,301	$12,431	$13,674	$15,041	$62,721
Proposed (To Be) costs	$5,251	$5,776	$6,354	$6,989	$7,688	$32,058
Productivity improvements from enhanced agility	$5,023	$5,525	$6,078	$6,686	$7,355	$30,667

Annual benefit growth (starting in year 2) | 10.0%

Business Agility - Revenue Impact

The Dell solutions speeds the provisioning and deployment of new applications which produces associated revenue sooner.

Business Agility - Revenue Impact	Current Solution	Benefits with Proposed Solution	Potential Business Agility Impact for Proposed Solution
New hardware deployment projects per year per year	0.333		0
Average system provisioning time per hardware deployment (days)	45	20.0%	36
Average annual revenue value per new hardware deployment	$250,000		$250,000
Average lost revenue opportunity per hardware provisioning	$30,822		$24,658
Annual value of potential revenue losses due to hardware provisioning	$10,274	$2,055	$8,219
Net incremental contribution	10.0%		10.0%
Annual incremental margin contribution	$1,027	$205	$822

Business Agility - Revenue Impact	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Current (As Is) costs	$10,274	$11,301	$12,431	$13,674	$15,041	$62,721
Incremental margin contribution	$1,027	$1,130	$1,243	$1,367	$1,504	$6,271
Proposed (To Be) costs	$8,219	$9,041	$9,945	$10,940	$12,034	$50,179
Incremental margin contribution	$822	$904	$994	$1,093	$1,202	$5,015
Reduction in business loss from system provisioning	$2,055	$2,260	$2,486	$2,734	$3,007	$12,542
Incremental margin contribution	$205	$226	$249	$274	$302	$1,256

Annual benefit growth (starting in year 2)	10.0%

Unplanned Downtime - Productivity Impact

The Dell solutions can speed the provisioning and deployment of new applications saving IT staff labor savings.

Business Agility - Productivity Impact	Current Solution	Benefits with Proposed Solution	Potential Business Agility Impact for Proposed Solution
New hardware deployment projects per year	0.3		0
Average system provisioning time per hardware deployment (days)	45	50.0%	23
Average annual value in productivity improvement per branch location	$250,000		$250,000
Average lost productivity improvement value per hardware deployment	$30,822	$15,069	$15,753
Annual value of productivity losses due to hardware deployment	$10,274	$5,023	$5,251

Business Agility - Productivity Impact	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Current (As Is) costs	$10,274	$11,301	$12,431	$13,674	$15,041	$62,721
Proposed (To Be) costs	$5,251	$5,776	$6,354	$6,989	$7,688	$32,058
Productivity improvements from enhanced agility	$5,023	$5,525	$6,078	$6,686	$7,355	$30,667

Annual benefit growth (starting in year 2)	10.0%

Unplanned Downtime - Business Costs

The Dell solution supports high availability which can significantly reduce business interruptions due to system failures.

Unplanned Downtime	Current Solution	Expected Benefits with Proposed Solution	Expected Availability for Proposed Solution
Average annual system availability	99.50%	25.0%	99.63%
Annual hours of unplanned system downtime	43.8	11.4	32.4
Estimated revenue or equivalent cost per hour of unplanned downtime	$50		$50
Annual business losses due to availability issues	$2,190	$568	$1,622
Net incremental contribution	14.2%		14.2%
Annual incremental margin contribution	$312	$81	$231

Unplanned Downtime	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Current (As Is) costs	$2,190	$2,409	$2,650	$2,915	$3,207	$13,371
Incremental margin contribution	$312	$343	$377	$415	$457	$1,904
Proposed (To Be) costs	$1,622	$1,784	$1,962	$2,158	$2,374	$9,900
Incremental margin contribution	$231	$254	$279	$307	$338	$1,409
Reduction in business loss from improved availability	$568	$625	$688	$757	$833	$3,471
Incremental margin contribution	$81	$89	$98	$108	$119	$495

Annual benefit growth (starting in year 2) 10.0%

Note - Availability includes all aspects of potential downtime, including hardware system errors, software errors, configuration issues and administrative issues. The Dell servers historically have delivered system availability approaching 5 9s, or 99.999%. The default expectations in this model assume much more conservative estimates based primarily on other factors which may impact total system availability.

Planned Downtime - Productivity Impact

The Dell solution supports improved systems management capabilities which can reduce or even eliminate planned downtime and lost productivity.

Planned System Downtime	Current Solution	Expected Benefits with Proposed Solution	Potential Planned Downtime for Proposed Solution
Annual hours of planned system downtime per year	438.3	20.0%	350.6
Average number of knowledge workers impacted per outage	3.0		3.0
Average productivity impact on knowledge workers during outage	20.0%		20.0%
Annual productivity losses due to scheduled downtime (hours)	263.0	52.6	210.4
Average fully burdened hourly wage for knowledge workers	$34.88		$34.88
Annual cost of productivity losses due to scheduled downtime	$9,173	$1,834	$7,339

Unplanned Storage Downtime	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Current (As Is) costs	$9,173	$10,090	$11,099	$12,209	$13,430	$56,001
Proposed (To Be) costs	$7,339	$8,073	$8,880	$9,768	$10,745	$44,805
Reduction in productivity losses from improved availability	$1,834	$2,017	$2,219	$2,441	$2,685	$11,196
FTE productivity improvements	52.60	57.86	63.65	70.02	77.02	321.15

Annual benefit growth (starting in year 2) 10.0%

Planned Downtime - Business Impact

The Dell solution improves systems management capabilities which can reduce or eliminate planned downtime and business interruptions.

Planned Downtime	Current Solution	Expected Benefits with Proposed Solution	Potential Planned Downtime for Proposed Solution
Annual hours of planned system downtime per year	20.0	70.0%	6.0
Estimated revenue or equivalent cost per hour of planned downtime	$17		$17
Annual business losses due to scheduled downtime	$342	$239	$103
Net incremental contribution	14.2%		14.2%
Annual incremental margin contribution	$49	$34	$15

Planned Downtime	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Current (As Is) costs	$342	$376	$414	$455	$501	$2,088
Incremental margin contribution	$49	$54	$59	$65	$72	$299
Proposed (To Be) costs	$103	$113	$124	$136	$150	$626
Incremental margin contribution	$15	$17	$19	$21	$23	$95
Reduction in business loss from reduced planned downtime	$239	$263	$290	$319	$351	$1,462
Incremental margin contribution	$34	$37	$40	$44	$49	$204

Annual benefit growth (starting in year 2)	10.0%