Agenda

- Executive Summary
- Current System
  - System Summary
- Proposed Solution
  - Solution Summary
  - Get Efficient Comparison Summary
  - Energy Cost Comparison
  - Space Comparison
- Future-Proof Program
- Energy Star & Dell Technologies

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All power consumption values and related cooling, carbon emission, and cost values depicted in this report are estimates only and are not guaranteed. Estimates calculated by Dell based on the provided information, configuration, and location assumptions. Depicted values should not be used for emission inventories or formal carbon footprint accounting exercises. Individual customer results will vary depending on product configuration, usage, operating conditions, power management settings, and other factors. Any competitor data was obtained from publicly available sources.

Executive Summary: Source to Target

545

(SPEC)

Compute Power available

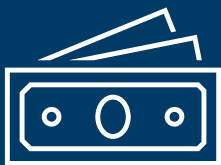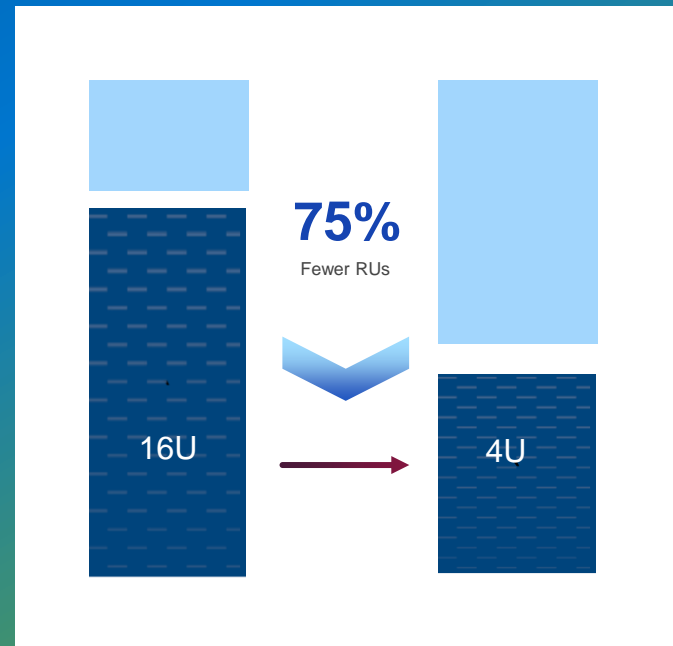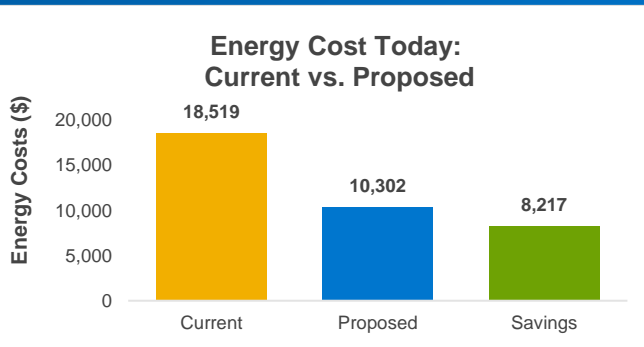44% Less emissions

44% Less power & cooling

-0.2X More compute power

1.1X Higher memory speed

Energy Cost Today: Current vs. Proposed

Energy Costs ($)

	18,519	10,302	8,217

- 20,000
- 15,000
- 10,000
- 5,000
- 0

Current — Proposed — Savings

£41K

SAVINGS OVER 5 YEARS
FIXED ENERGY RATE: 0.35 £ / kWh

75% Fewer RUs

16U → 4U

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"The world has never witnessed such a major energy crisis in terms of its depth and its complexity"

Dr. Fatih Birol
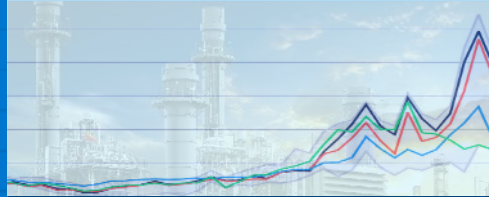**Executive Director, International Energy Agency**

Accelerate the circular economy - Protect the planet

DELLTechnologies

Unprecedented & Challenging Times

These external forces can limit your business

Energy costs typically make up

40-60%

of data center's operating costs*

Energy markets are in turmoil

Rising consumption is straining capacity

Weather impacting data center operations

Economic uncertainty in every market

D≪LL Technologies

Get Efficient with Dell Storage

Energy Efficiency

Dell is committed to improving energy efficiency in our storage portfolio with each generation.

Thermals and Cooling

By helping systems maintain their optimal operating temperatures with our Adaptive Cooling technology by reducing energy wasted on powering and cooling your equipment.

Infrastructure Consolidation

Innovations in storage, data deduplication, and compression enable you to reduce your hardware needs and save energy, all while reducing your physical and carbon footprint in the data center.

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Current Servers Summary: 5 x Poweredge R640 + 2 x Poweredge R620 + 1 x Poweredge R740xd

Compute

Total compute power: 686
CPU # / type:
10 / Intel(R) Xeon(R) Silver 4110
4 / Intel(R) Xeon(R) CPU E5-2640 0
2 / Intel(R) Xeon(R) Gold 6144

Hardware

Model: Poweredge R620, Poweredge R640, Poweredge R740xs
Rack Units: 16

Emissions

15570 kgCO$_2$e / Year

D&LL Technologies

Proposed Solution Summary

4 x Poweredge R650xs

Hardware

Total solution compute power (SPEC): 545

Solution CPU # / type: 8 / Intel Xeon Silver 4309Y

Per CPU cores / threads: 8 / 16

CPU clock / turbo (GHz): 2.8 / 3.6

Cache per CPU (MB): 12

Maximum supported memory per CPU (TB): 6

Environmental

Power consumption (kW): 1.68

Cooling (BTU/h): 5732

$KgCO_2e$: 7876

Rack space (U): 4

15G Benefits* with
3rd Gen Intel® Xeon® Xeon SP by Intel
*compared to 14G

1,46x Improvement gen-on-gen Performance (spec data show even more in some cases)

Up to 1,60x Higher Memory Bandwidth vs. prior gen.

Up to 2,66x Higher Memory Capacity vs. prior gen.

Up to 1,33x More PCI Express Lanes per Processor vs. prior gen.

Specialty SKUs dedicated to specific workloads

D∈LL Technologies

Get Efficient Comparison

Current solution: 5 x Poweredge R640 + 2 x Poweredge R620 + 1 x Poweredge R740xd

Total Compute Power (SPEC)*: 686
* Based on 60% SPECint & 40% SPECfp

Memory Speed (MT/s)*: 2933
* Dependent on selected CPU E5-2623 v4

Power (kW): 3.02

Cooling (BTU/Hour): 10.3K

Rack Space (U): 16

£19K–28K*
Annual power and cooling costs
*Yearly costs, average over the next 5 years. Constant energy rate to XX% YoY increasing energy rate.

£93K–138K*
5-year power and cooling costs
*Constant energy rate to XX% YoY increasing energy rate.

Proposed solution: 4 x Poweredge R650xs

Total Compute Power (SPEC)*: 545
* Based on 60% SPECint & 40% SPECfp

Memory Speed (MT/s)*: 3200
* Dependent on selected CPU E5-2623 v4

Power (kW): 1.68

Cooling (BTU/Hour): 5.73K

Rack Space (U): 4

£10K–15K*
Annual power and cooling costs
*Yearly costs, average over the next 5 years. Constant energy rate to XX% YoY increasing energy rate.

£52K–77K*
5-year power and cooling costs
*Constant energy rate to XX% YoY increasing energy rate.

44% less power & cooling

75% less rack space

£41K savings over 5 years
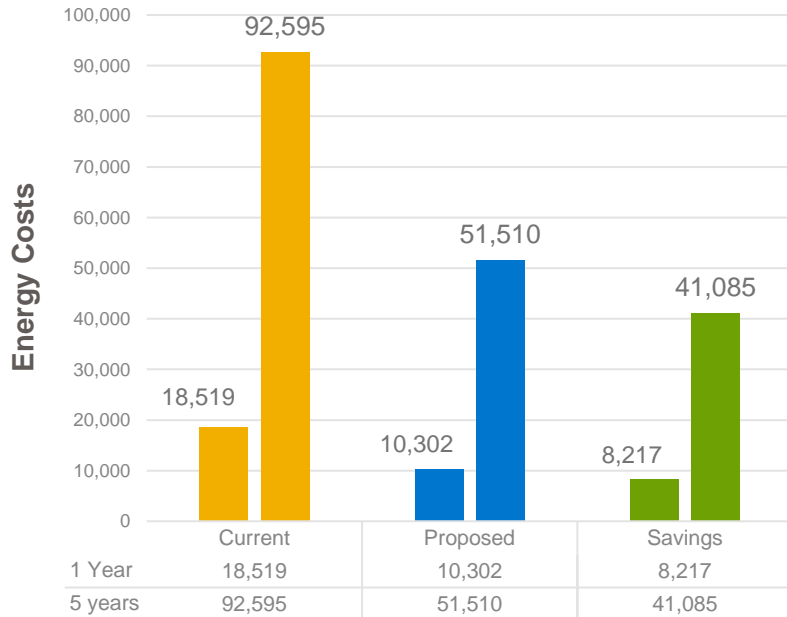Fixed energy rate: 0.35 £ / kWh

£61K savings over 5 years
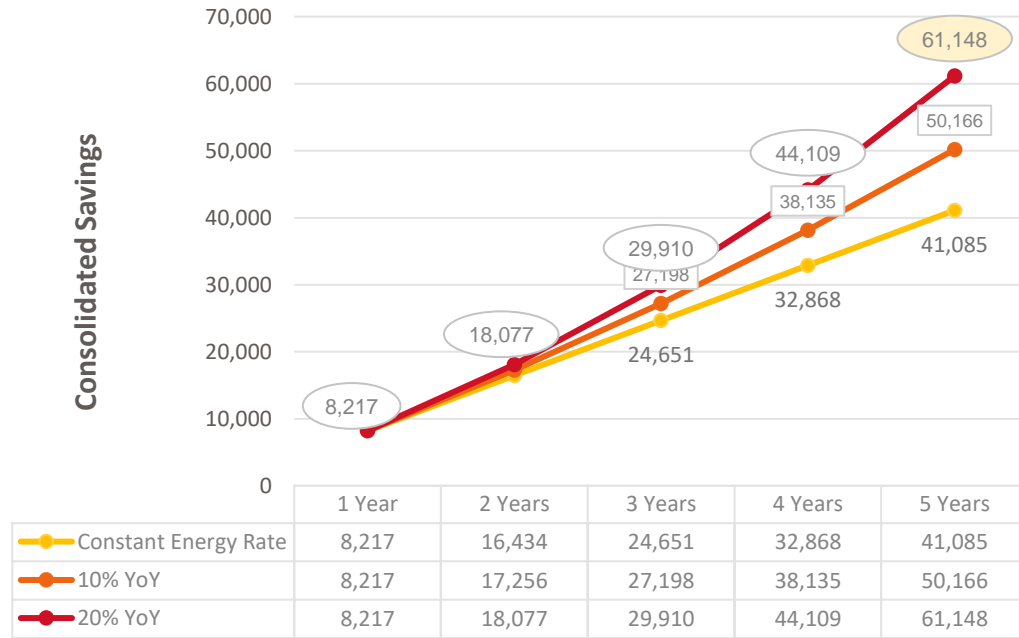YoY increase of 20%: Avg. 0.52 £ / kWh

-0.2x more compute power

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Energy Cost Savings

Energy Cost Comparison: Current vs. Proposed

	Current	Proposed	Savings
1 Year	18,519	10,302	8,217
5 years	92,595	51,510	41,085

Energy Cost Savings, Assuming Increasing Energy Rates

	1 Year	2 Years	3 Years	4 Years	5 Years
Constant Energy Rate	8,217	16,434	24,651	32,868	41,085
10% YoY	8,217	17,256	27,198	38,135	50,166
20% YoY	8,217	18,077	29,910	44,109	61,148

D‹LL Technologies

Investing in the future of our planet

44% reduction
in power and cooling

6.91 metric tons
CO_2 saved per year

Reduce your carbon footprint and protect against rising energy costs

PER-YEAR SAVINGS EQUIVALENT TO:

GREENHOUSE GAS EMISSIONS FROM:
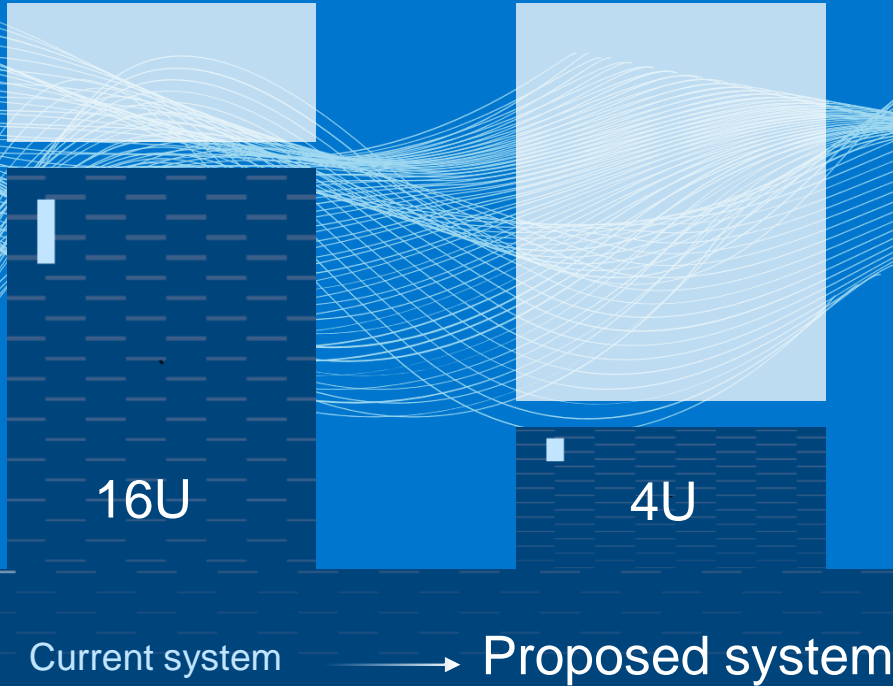**2.4 tons of waste recycled instead of landfilled**

CO_2 EMISSIONS FROM:
16895 miles driven by an average passenger vehicle

CARBON SEQUESTERED BY:
8.3 acres of forests in one year

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Space comparison

16U

4U

Current system → Proposed system

75%

Less RUs

Consolidation helps lower costs, meet sustainability goals and reduce management overhead

D&LL Technologies

FUTURE-PROOF
PROGRAM

Peace of mind	Investment protection	A path forward
No hidden costs or fees	Lowering the risk of your investment	You will be ready for the future

3 YEAR Satisfaction Guarantee

Flexible Payment Solutions

Tech Refresh & Recycle

CloudIQ

Storage Data Reduction

Anytime Upgrade

Cyber Recovery

Data Protection Deduplication

All-inclusive Software

Never-worry Data Migration

Clear Price

Energy Star and Dell Technologies

Products that earn the ENERGY STAR label meet strict energy-efficiency specifications set by the U.S. EPA helping you save energy and money while protecting the environment.

ENERGY STAR

76%

We have reduced energy intensity throughout our products by 76% since 2013.

290 models of desktops/laptops

121 monitors & displays

46 server models

23 storage products

43 networking switches*

From desktop to datacenter, no one matches Dell's Energy Star coverage

The only vendor in this category

DELLTechnologies

Get Efficient with Dell Storage

Energy efficiency
80% power savings per TB* with PowerMax and 60% more IOPs per watt ** with PowerStore

Infrastructure consolidation
Dell guarantees 4:1 reduction ratio for PowerStore and PowerMaxOS, with no pre-assessment required***

Thermals & cooling
With adaptive cooling, variable speed fans adjust as CPU usage and temperatures change

*Based on Dell's internal analysis comparing power (kVA) per effective terabyte of the PowerMax 2500 compared with the PowerMax 2000, March 2022.

**Based on Dell analysis comparing maximum IOPS per Watt for PowerStore 1200 base appliance configurations with PowerStoreOS 3.0 vs. PowerStore 1000 base appliance configuration with PowerStoreOS 2.0. Actual results vary.

***PowerStore and PowerMax OS: 4:1 average rate guaranteed across customer applications. Rates for individual applications may vary. See Future-Proof program terms and conditions for details.

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Unprecedented & Challenging Times

These external forces can limit
your business

Compared to 2018, the energy consumption of data centers in the EU is set to increase by 21% by 2025.

Data centers globally are expected to consume 3000 TWh/a in 2030 - 8% of global electricity consumption.

By the EU Green Deal, the IT sector needs to be Carbon Neutral by 2030.

European climate law makes reaching the EU's climate goal of reducing EU emissions by at least 55% by 2030 a legal obligation.

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