The bridge to possible

Accelerating the Journey to Net Zero with Cisco Sustainable Solutions

Denise Lee, Vice President, Engineering,
Cisco Engineering Sustainability Office

ITLGEN-1020

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Sustainability
A Business Imperative

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Business Leaders

77% Believe it's a **significant challenge for their IT function to reduce environmental impact** while significantly increasing computing power

80% Claim **that technological innovation will play a significant role** in their whole organisation's transformation to a net zero business model

80% Believe that the **CTO's role is pivotal to a successful net zero transition**, and the CTO has the potential to become the greatest driver of sustainability in the organisation

Senior IT Decision-Makers

77% Say **IT-related emissions are one of the hardest aspects to improve**

71% Believe there is a **conflict between the organisation's need for ever increasing computing power** demanded by new technologies (like AI or IoT) and the need to make the IT function more sustainable

70% Believe **complete transformation of their organisation is required to transition to a net zero carbon business model** or sustainable business

81% Believe **significant investment is required** to make their organisation's IT function / technology more sustainable

78% Believe their organisation **will pay a green premium for an IT product/service** that has strong sustainability credentials

Source: Intel Advisory Board – The Sustainable CTO | 2023

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IT Plays Many Roles

Sustainability **IN** IT

- Greener Data Centre
- Cloud Migration
- Energy Optimisation
- Increased Asset Utilisation
- Equipment Modernisation
- Extended Life
- Remanufactured Equipment
- Supplier Management

Sustainability **BY** IT

- E-Work / Hybrid Work
- E-Health
- E-Learning
- E-Commerce
- Smart Buildings
- Smart Grid
- Smart Agriculture
- Smart Manufacturing

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Getting Started

Steps to Building Our IT Sustainability Strategy

Industry Research and Standards Boards

- ✓ Supplier briefings, peer discussions, analyst reviews
- ✓ Scientific papers, specialist training & certification
- ✓ UN SDG, IPCC, ITU, GeSI, SBTi, GSMA, CDP, GRI, SASB, TCFD

Understanding our company emissions

- ✓ What goals did we have? Where did we report?
- ✓ Who completed the report? How did they do calculations?
- ✓ What best practices existed? Who can we partner with?

Building our IT strategy & setting goals

- ✓ What was our IT footprint? Where was the opportunity?
- ✓ Drafted framework & objectives Reviewed with service owners
- ✓ Calculated a baseline, set goals, started to measure progress

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Teams Associated with Sustainability

Cisco IT Sustainability Framework

Align & Support Company Sustainability Goals & Initiatives

Sustainable by Design

- Design principles / Best practices
- Life Cycle & System Thinking
- Review design impact with stakeholders

Responsible Procurement

- Analyse IT spend
- Prioritise focus areas
- Supplier scorecard / goal tracking
- Supplier Code of Conduct

Optimisation of Operations

- Holistic service view
- Extend life / Improve performance
- Asset utilisation / Remove excess
- Automation to scale

Asset Lifecycle Management

- Consider at design phase
- Process assets to next-best use
- Leverage supplier best practices
- Asset traceability

Energy Management

- Source renewables
- Measure & monitor use / energy visibility
- Improve power efficiency
- Optimise energy consumption

Employee Culture

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Sustainability Metrics

Scope 1

Direct emissions from operations owned by the company

Examples:
Heating fuel, company vehicles

Scope 2

Indirect emissions from the generation of purchased electricity, steam, heating and cooling

Examples: Electricity used in company buildings

Scope 3

All other indirect emissions that occur in a company's value chain

Examples: Employee business travel and commuting, supplier emissions, use of sold products, transportation and distribution

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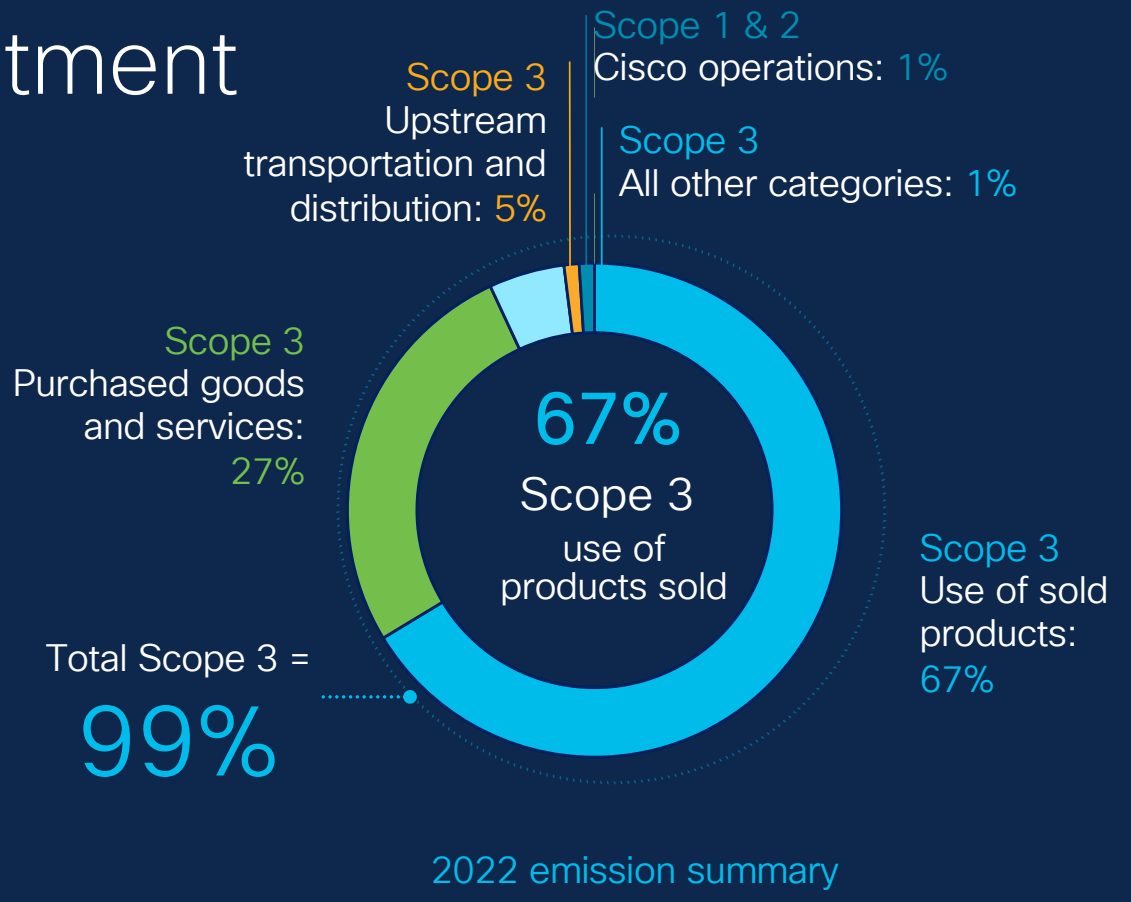
Keeping our Commitment

How we are reducing Scope 3

- Improving product energy efficiency
- Collaborating with partners to increase renewable energy use
- Embedding circular design principles across our business
- Goal: 80% of our component, manufacturing, and logistics suppliers
- spend to set a public absolute GHG emissions reduction target by FY25



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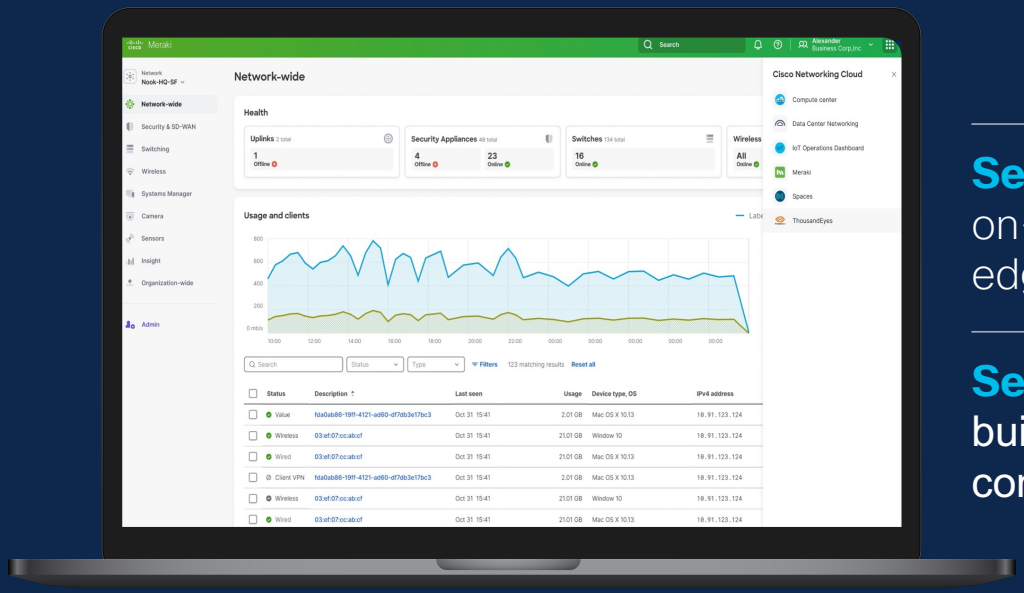
It Starts With Telemetry

Embedded Across Cisco's Energy Management Platform and APIs



Sustainable IT Priorities

See your global on-premises, cloud, and edge environments

Connect your infrastructure operations across compute, storage

Secure operations with built-in advisories and continuous risk mitigation

Automate workflows, APIs and SDKs for day 0 to day N operations

Use Cases: Energy Consumption | GHG Emissions | Energy Mix | Energy Cost

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Cisco Solutions

How Technology will Scale Progress

Data Centers

- Energy Visibility and Management
- IT Energy and Cooling Efficiency
- Workload Optimisation
- Rack and Space Optimisation
- Asset Lifecycle Management

Smart Buildings

- Energy Visibility and Management
- IT Energy and Cooling Efficiency
- Occupancy and Space Insights
- Environmental Wellness Metrics
- PoE Lighting
- Connected Hotdesking

Internet for the Future

- Designed for Convergence, Longevity and Openness
- Optimised Chip Design and
- Performance with Silicon One
- Routed Optical Networking
- Built-in Layered end-to-end Automation

Industry Solutions › Integrated and Interoperable sustainable technologies

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Data Center News

BIS Research

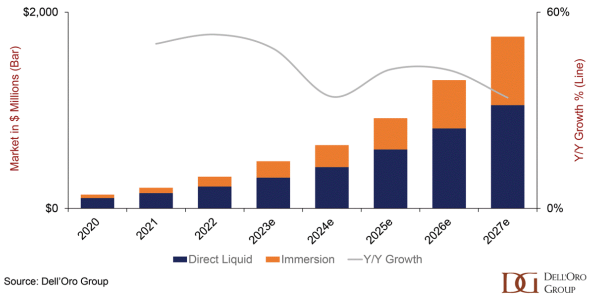
Data Center Liquid Cooling Market - A Global and Regional Analysis

Focus on Product, Application, and Country Analysis – Analysis and Forecast, 2022–2027

Liquid Cooling Growth Rates 27.3%

(2021-2026); Key drivers for liquid cooling are air cooling limits, sustainability and edge growth.

Data Center Liquid Cooling Market Forecast



Dell'Oro Group

AI is Ushering in a New Era for Data Center Physical Infrastructure

$500B Data Center Capex Physical Infrastructure by 2027

SIGN IN / UP

The Register

EMERGING CLEAN ENERGY TECH WEEK

To quench AI's thirst, the way we build, operate datacenters needs to change

7

AI infrastructure isn't just hot and power hungry, it's uses a prodigous amount of water researchers tell El Reg

ON-PREM

Money starts to flow as liquid cooling gets hot in datacenters

Global investment company KKR picks up CoolIT Systems for $270M

Gartner

Press Release

Newsroom

Gartner Predicts 75% of Organizations Will Have Implemented a Data Center Infrastructure Sustainability Program by 2027

Analysts to Explore Sustainable IT Infrastructure Trends at Gartner IT Infrastructure, Operations & Cloud Strategies Conference in Sydney, May 15-16, 2023

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Energy Consumption in Data Centers

Data centers represent

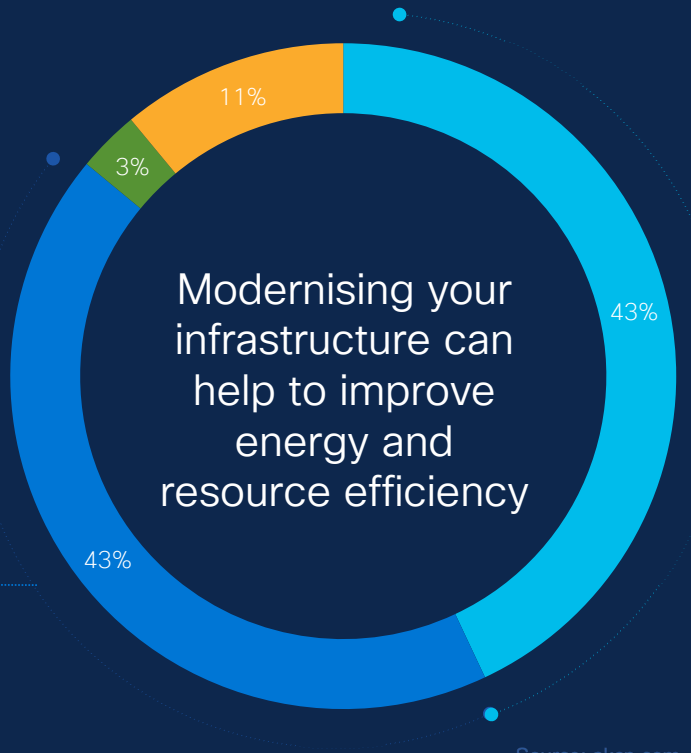
1% electricity use globally

2021: 200 terawatt hours (TWh) per year
2030 Growth Estimate: 3,000 (TWh) per year

- Servers
- Chillers, fans & pumps
- Network
- Storage

86%

Cooling, power systems & servers



Source: akcp.com

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Transforming to the Sustainable Data Center

Optimise efficiency, visibility, performance and cost across your networking and compute infrastructure

Nexus 9800 & UCX-X Series
Migrate to Modern Hardware

Nexus Dashboard
Monitor Energy Management

Cisco Silicon One & Optics
Increased performance with decreased footprint

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Global Emission Production in Buildings

Building operations and construction account for an estimated

37% CO_2

emissions globally

Source: UN Programme Rep

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Smart Buildings and Intelligent Workspaces

Eliminating siloed networks, powering, connecting and securing the building while simplifying design and operations

90W PoE
Consolidate Power & Data Networks

Meraki
Wi-Fi 6 & environmental data-driven insights

Cisco Spaces
Smart Environment Automation

Catalyst Switches & Access Points
Manage wired IoT devices

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Success Story | Penn1

Sustainability Achieved

LEED Platinum
for Sustainability

100% Smart Building
Power-over-Ethernet

Real-time
Air Quality

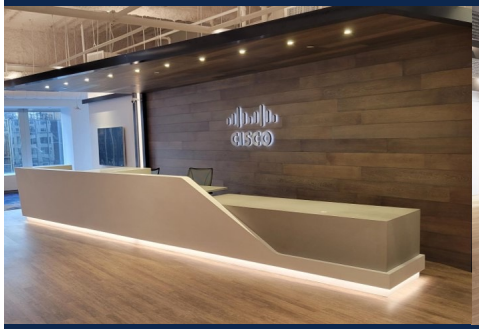
Real-time
Space utilisation

WELL Platinum
Safety Rating

Real-time
8000 data pts/sec

110 Mixed Type
Collaboration Areas

Low-Voltage
Teknion Desks



Pre-Retrofit | 8 months
Total Usage kWh = 505,196
Avg. kWh / day = 2,062

Post-Retrofit | 8 months
Total Usage kWh = 325,352
Avg. kWh / day = 1,328

Energy Usage Change
Over 8 months average=
35.6% savings

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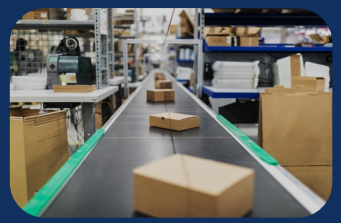
Industry Solutions

Sustainable technologies can deliver industry-specific interoperable solutions



Manufacturing
Factory | Assembly
Supply Chain

Transportation
EV | Aviation
Logistics

Sustainable Events
Arenas | Stadiums

Utilities
Micro Grids
Renewables

Agriculture
Smart Irrigation
Weather Detection

Internet for the Future
Webscale / Hyperscale

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Internet for the Future

Routed Optical Network Migration

Increase your capacity and scalability while reducing footprint and power for a lower carbon impact

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What's Next

Accelerating Your Journey Today

- Energy Management
- Sustainable Hardware
- Green Software
- Business Transformation

Preparing For Tomorrow

- Develop technical ecosystem partnerships
- Enable DC microgrids & power distribution systems
- Design and develop liquid cooling solutions
- Leverage infrastructure disaggregation
- Integrate Energy Networking

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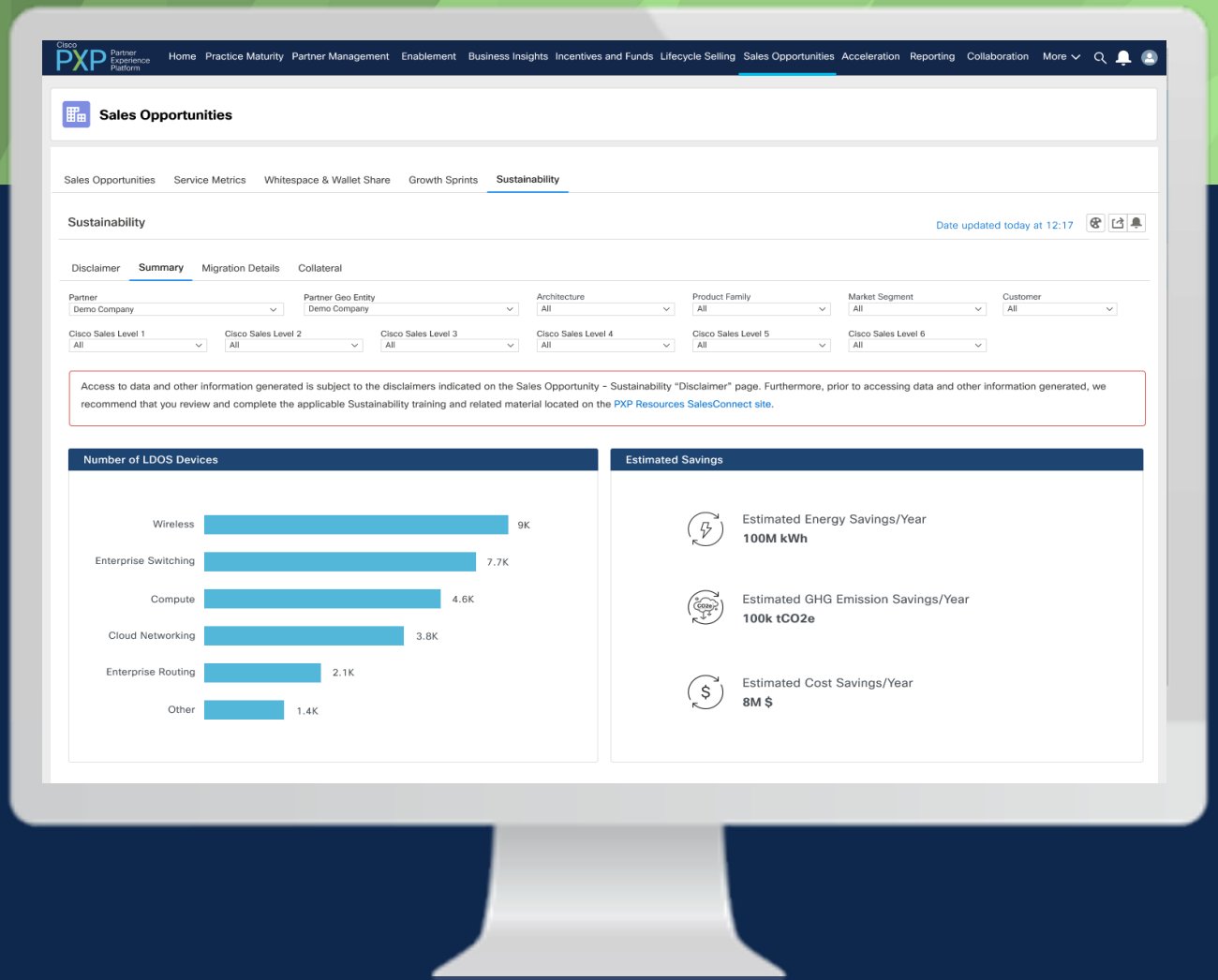
What's New

Sustainability Estimator

Cisco's Partner Experience Platform (PXP)



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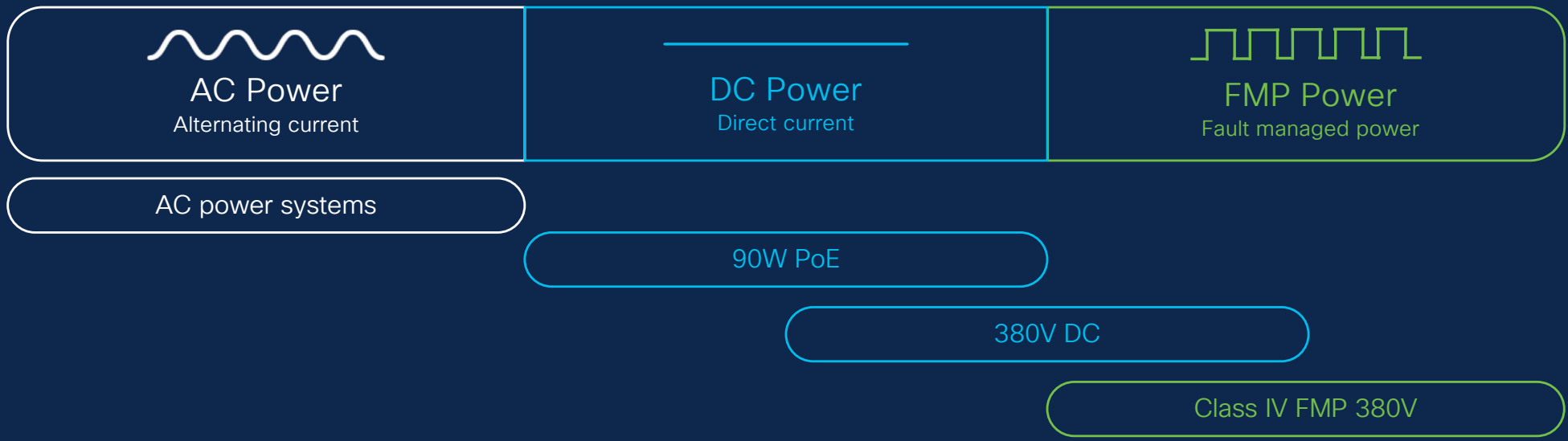
What's New
Evolution of Energy Networking

Creating networks that connect and distribute energy more simply, safely, and sustainably



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What's New | Available Now

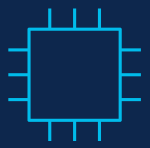
AI-Ready Infrastructure and Silicon

World-class Performance

Guaranteed throughput, lowest job completion time, and ultra-low latency

Scalable Ethernet Networking

Highest economies of scale, industry-wide interoperability



Optimised for AI Workloads

Highest switching radix enables 40% reduction in cluster Capex and Opex

Sustainable Power Consumption

Minimised in-system power draw

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Fireside Chat with Telstra

Iskra Nikolova

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Telstra

Aging Edge Network – 450 Nodes	Alignment w/ CTO / CFO / CSO	Sustainability Value Stack	Automated Migration	TCO & Green Outcomes
4-5 Years before EOL	Align on Sustainability Vision & Metrics	No landfill	NSO	5400 Tons Co2 Reduction Annually
No Planned Upgrade Path	Agree on immediate next steps TCO, Energy & Space savings, CO2 Reduction	Circular Economy	CNC	$2.5M Annual Energy Savings
		Platform Refresh		152 Racks Saved
		Bundled Optics		1500 Fibres Recovered
		Cisco Capital		

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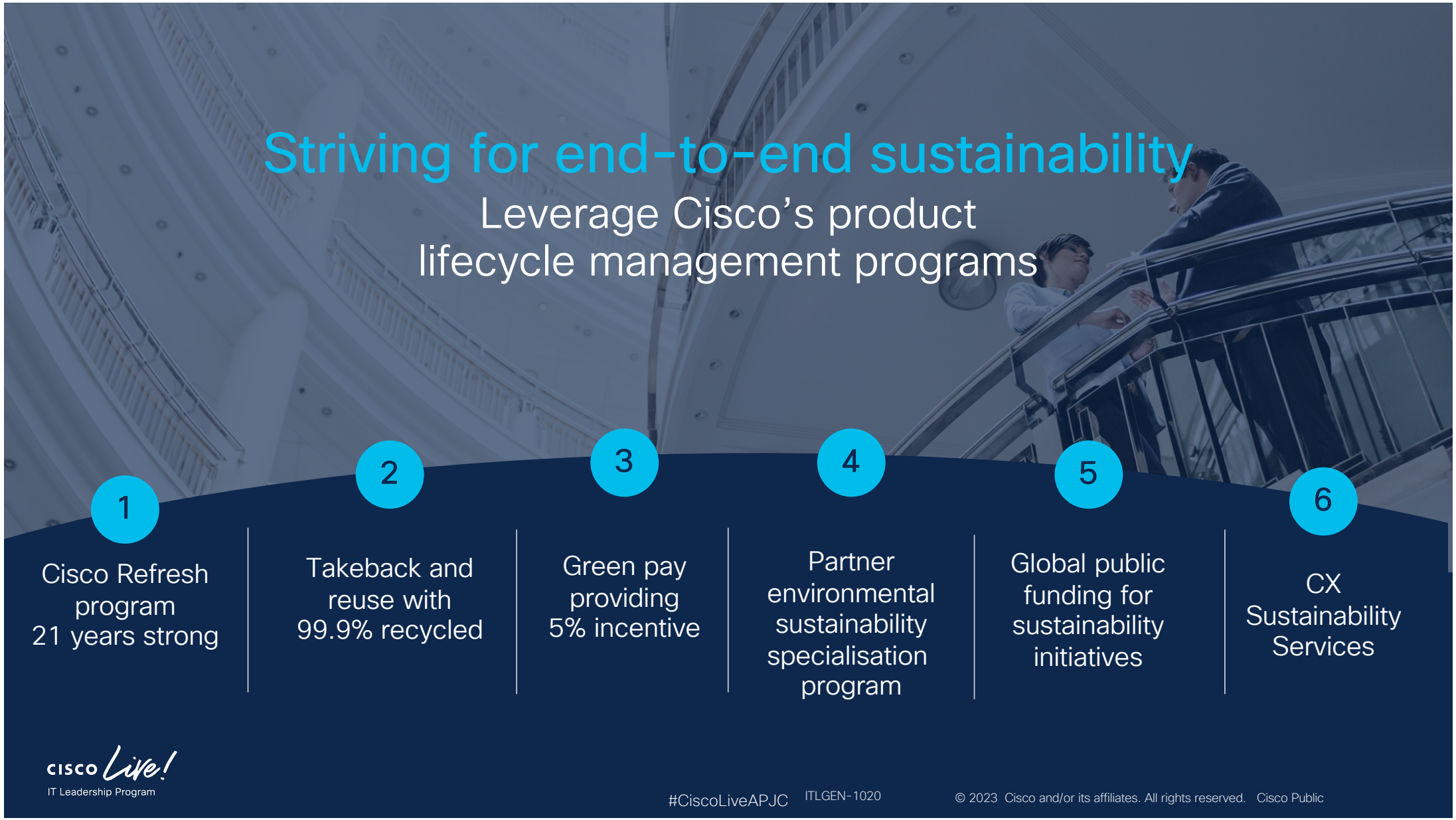

Striving for end-to-end sustainability

Leverage Cisco's product lifecycle management programs

1. Cisco Refresh program 21 years strong
2. Takeback and reuse with 99.9% recycled
3. Green pay providing 5% incentive
4. Partner environmental sustainability specialisation program
5. Global public funding for sustainability initiatives
6. CX Sustainability Services

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The Power of Purpose

Cisco 2023 Purpose Report

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