

## Energy Efficiency in Data Centers

Through Optimized operations

Eswar Viswanathan Director – Data Center Lifecycle Services International – Secure Power Division



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# Our technologies ensure that Life Is On everywhere, for everyone and at every moment.



## Schneider Electric, the leader in digital transformation of energy management and automation

## €24.7Bn

FY 2017 revenues

~5%

of revenues devoted to R&D



of revenues from IoT

## Computing architectures continue to evolve into multi-site, hybrid systems of centralized and "edge"

#### CENTRALIZED CLOUD Massive compute and storage



#### LOCAL EDGE

Low latency compute and storage near to where data is consumed



**REGIONAL EDGE** Large compute and storage located closer to the user



## Recent industry moves are showing a pendulum swing back, creating a decentralized, hybrid computing ecosystem







The following diagram shows an example of OCAs that are embedded in a partner network, in conjunction with SFI peering which is used to provide additional resiliency and to enable nightly content fills and updates. Each site is served by a separate OCA or a set of OCAs, depending on your specific requirements.



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NETFLIX



## Reality is most organizations are challenged by this hybrid IT complexity





#### Our collective challenge

### To provide increasing availability

## at each node while improving efficiency and

### performance in this complex hybrid IT environment

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#### Data Center Lifecycle Services (DCLS)



### **Improving Energy Efficiency in Data Centers**

A progressive framework for the reduction of carbon emission within Data Centers

#### "How to go Green"

### Define Green Policies, Systems and Processes

- Energy and Environmental Management System
- Adopts the Plan-Do-Check-Act (PDCA) methodology
- Defined performance metrics to provide common benchmark

## "How Green" Benchmark the performance impact of green policies, systems & processes

- Covers both existing and new data centers
- Five key criteria Energy efficiency, Water efficiency, Sustainable construction & management, Indoor environment quality as well as other green features
- Scoring level differentiation of Platinum, GoldPLUS, Gold or Certified status







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Schneider Electric supports data centre operators with a standardised and proven framework and methodology as well as advanced automation tools and repeatable processes to achieve SS564 Green Data Centre certification

Integrating energy and environmental efficiency into Data Centre's Management practices comprises of <u>**4 key components**</u>

1.

3.

- Critical environment Assessment, Baselining and Target Setting
- **2.** Green Data Centre Certification Consultancy
  - Metering and monitoring







#### **Establish the Energy Management and Environmental System**

Areas of energy management applicable to Green Data Center standards

### **SS564 Green Data Centre metrics** (SS 564-1-2013)

Organisations needs to adopt the green data centre metrics defined in Annex A for continuous monitoring & measurement of its energy performance



### Scope of BCA-IDA Green Mark for Data Centres

New dedicated green building rating system for data centres is jointly developed by Building and Construction Authority (BCA) and the Infocomm Development Authority (IDA)



Scheme covers both existing data centres and new data centres that may occupy a purpose-built data centre building or are part of a larger building

It assesses data centres based on five key criteria energy efficiency, water efficiency, sustainable construction & management, indoor environment quality as well as other green features.

Based on the combined scoring, the data centres will be awarded Green Mark Platinum, GoldPLUS, Gold or Certified status.

Green Mark Score	Green Mark Rating
90 and above	Green Mark Platinum
85 to <90	Green Mark Gold <sup>eius</sup>
75 to <85	Green Mark Gold
50 to <75	Green Mark Certified



### Implementation process

SS564 & Green Mark Certification



#### Sample Solution Overview – Estimated Green Mark Points

Existing DC	Green Mark Score	Green Mark Rating	
Prerequisite:	90 and above	Green Mark Platinum	
SS 564	85 to <90	Green Mark Gold <sup>Plus</sup>	
5 Points:	75 to <85	Green Mark Gold	
SS 564	50 to <75	Green Mark Certified	

Assessment Criteria	Maximum points	<b>Estimated points</b>	Remarks
			Based on Estimated PUE
			(33%: 1.55, 66%: 1.4, 100%:
			1.37), High Efficiency cooling
			& UPS system, SS564
Part 1: Energy Efficiency	83	71	Certification
			Pro-rated (refer to proposed
Part 2: Water Efficiency	12	0	Pro-rated points)
Pare 3: Sustainable Construction &			Fire suppression with Zero
Management	12	4	ODP, Pro-rated
			LED lights with motion sensor,
Pare 4: Indoor Environmental Quality	8	3	Pro-rated
Pare 5: Other Green Features	10	0	
Sub Total (Part 1-5)	125	78	
Total Green Mark Score after Pro-rate 42			Green Mark Platinum (Best
points		117	Case Scenario)



5-1 Other Green Features & Innovations







The Platform • Expertise • Community • Lifecycle tools



			E	Building	Data Center	Indu	stry	Infrastructure	
ſ	ecurity				Apps, Analytics	& Services			
	End Cybers	Cloud and/or On Premise	Edge Control						
End to	End to		Connected Products						
	Ecos Build	Strux	ure I	EcoStruxure Power	EcoStruxure IT	EcoStruxure Machine	EcoStrux Plant	ure EcoStru Grid	ixure





### Navigating the Path towards improved Operational Efficiencies



# 10-30%

is the potential efficiency gain from optimized Data Centers

