Regional Data Centre

Andrew Lim, MD Group Enterprise

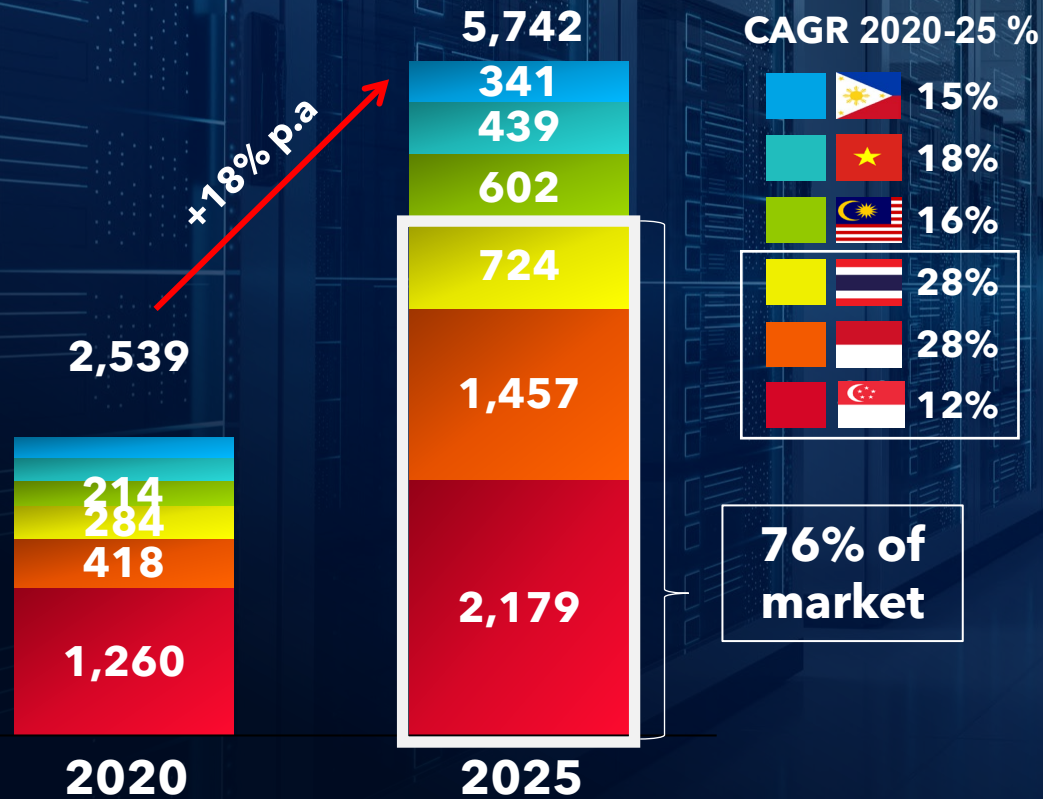31 August 2022

Singtel
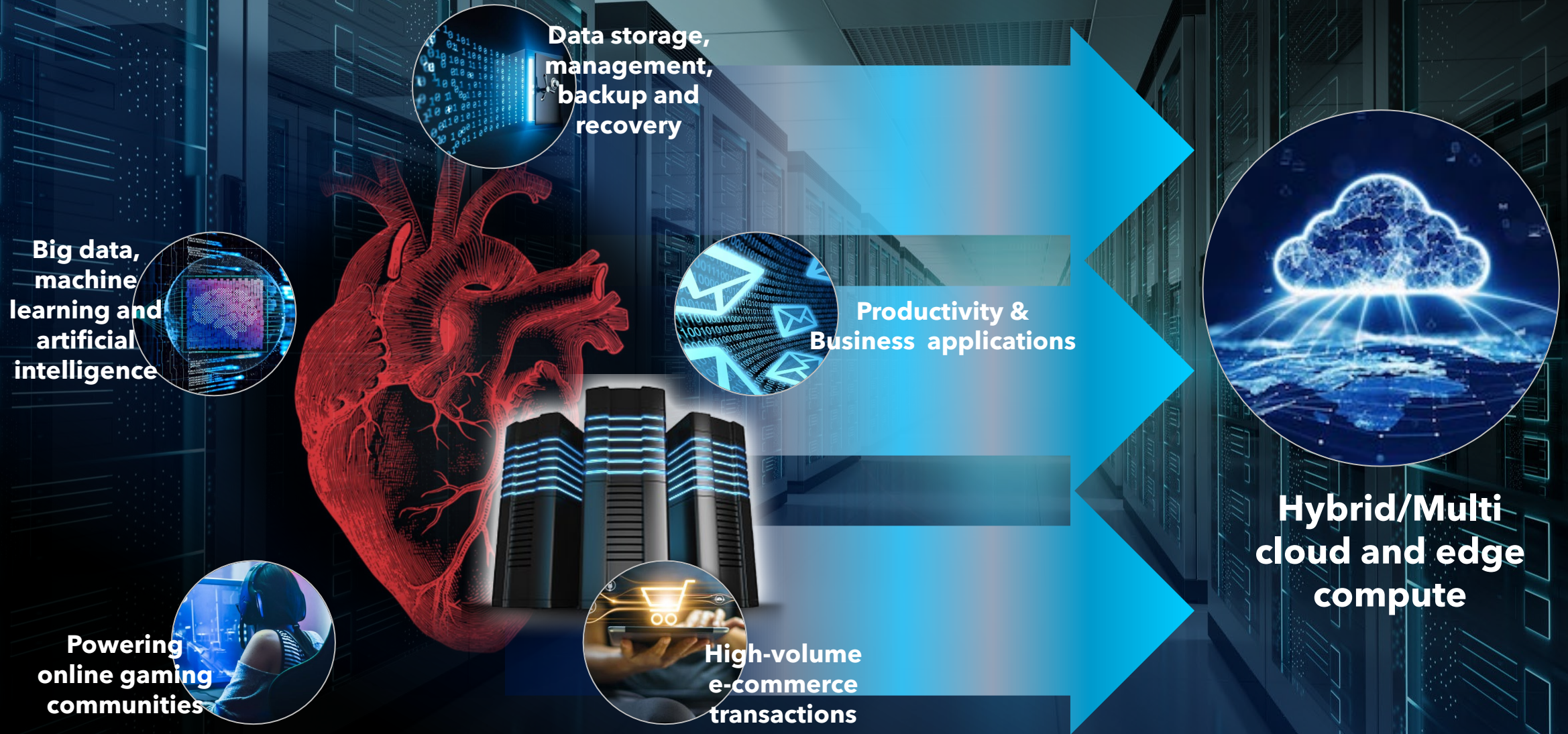
Attractive DC Opportunity in ASEAN

Regional DC Demand[1]: Ready for Lift-Off

**ASEAN DC Market
(Total Market Size USD '$M)**

+18% p.a

2020: 2,539
- 214
- 284
- 418
- 1,260

2025: 5,742
- 341
- 439
- 602
- 724
- 1,457
- 2,179

76% of market

CAGR 2020-25 %

Flag	CAGR
Philippines	15%
Vietnam	18%
Malaysia	16%
Thailand	28%
Indonesia	28%
Singapore	12%

(1. Source: Frost & Sullivan 2020 Forecast.)

Regional Demand Factors

Young, growing population of heavy data users

Online media & content, financial services, new applications (e.g. AR/VR)

Digital transformation by enterprises

Accelerated by 3-4 years in emerging Asia[2]

Big data/analytics leveraged at scale

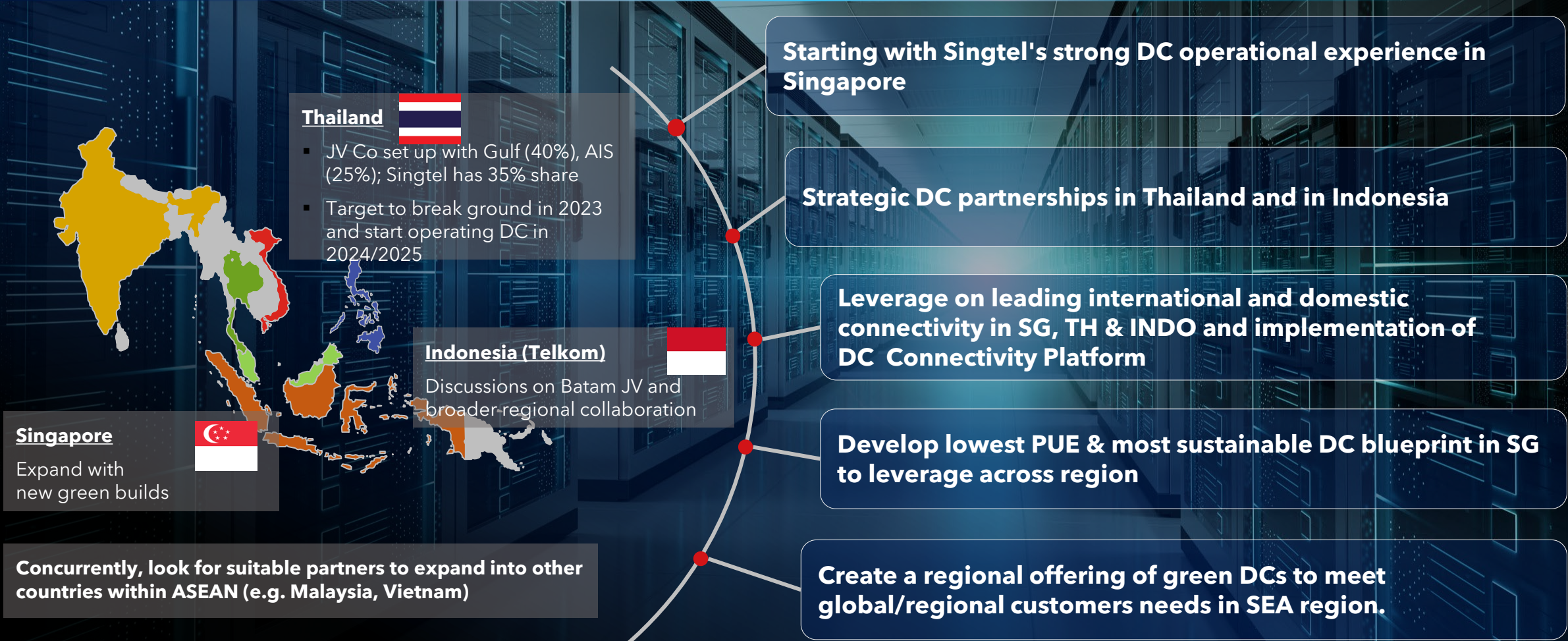*Increasing maturity of algorithms driving big-data use cases*

5G-driven demand for hybrid infra and increasing enterprise cloud adoption

Hyperscale cloud-based providers looking to be closer to users while meeting data residency standards

2. 2020 McKinsey Global Survey of Executives

3

Our Vision

To be the leading green and most sustainable DC Service Provider with the best inter-connectivity in the SEA region by FY26

Singtel

Thailand
- JV Co set up with Gulf (40%), AIS (25%); Singtel has 35% share
- Target to break ground in 2023 and start operating DC in 2024/2025

Indonesia (Telkom)
Discussions on Batam JV and broader regional collaboration

Singapore
Expand with new green builds

Concurrently, look for suitable partners to expand into other countries within ASEAN (e.g. Malaysia, Vietnam)

Starting with Singtel's strong DC operational experience in Singapore

Strategic DC partnerships in Thailand and in Indonesia

Leverage on leading international and domestic connectivity in SG, TH & INDO and implementation of DC Connectivity Platform

Develop lowest PUE & most sustainable DC blueprint in SG to leverage across region

Create a regional offering of green DCs to meet global/regional customers needs in SEA region.

Singtel is market leader in Singapore

7
Data Centres

>60MW
IT Capacity

>S$250m
Annual Revenue[1]

~60%
EBITDA Margin

DC West (41 MW)

Kim Chuan DC 2 (~21 MW)

DC Tuas (Planning Stage) (>30MW, 1.3 PUE)

- Leading DC operator in Singapore (25 years of operations)
- Strong Product And Operation Teams
- Leader in Asia Pacific network connectivity
- Top Quality Customer Service
- Developing industry greenest and lowest PUE for DC Tuas

ISO 27001

ISO 22301

ISO 9001

S S 507

MAS OSPAR Audit KC1, KC2, Bedok

BCA Green Mark Award Platinum

NCS Hub (AMK)

Comcentre 3

Kim Chuan DC 1

NCS Bedok

Telepark DC

Others

Building a regional Green DC Blueprint

Singtel

SUSTAINABILITY LEVERS

A **INFRASTRUCTURE & TECH**
- Adopt equipment & technology that contribute to better energy & water efficiency
- Partner with customers to deploy appropriate cooling technology

B **OPS & MAINTENANCE**
- Incorporate key sustainability standards throughout the asset lifecycle.
- Install IoT devices and IOT solutions

C **USE OF RENEWABLE ENERGY**

Gen 3: DC West

Gen 2: Kim Chuan DC 2*

Gen 4: DC Tuas (Planning Stage)

NCS Hub (AMK)   Comcentre 3   Kim Chuan DC 1   NCS Bedok   Telepark DC

Gen 1 DCs

GEN 4

DC Tuas
PUE (design): 1.3
IT Power (MW): > 30
TIA 942 DC Tier: Rated 3

GEN 3

DC West
PUE (design): 1.4
IT Power (MW): 41
TIA 942 DC Tier: Rated 3

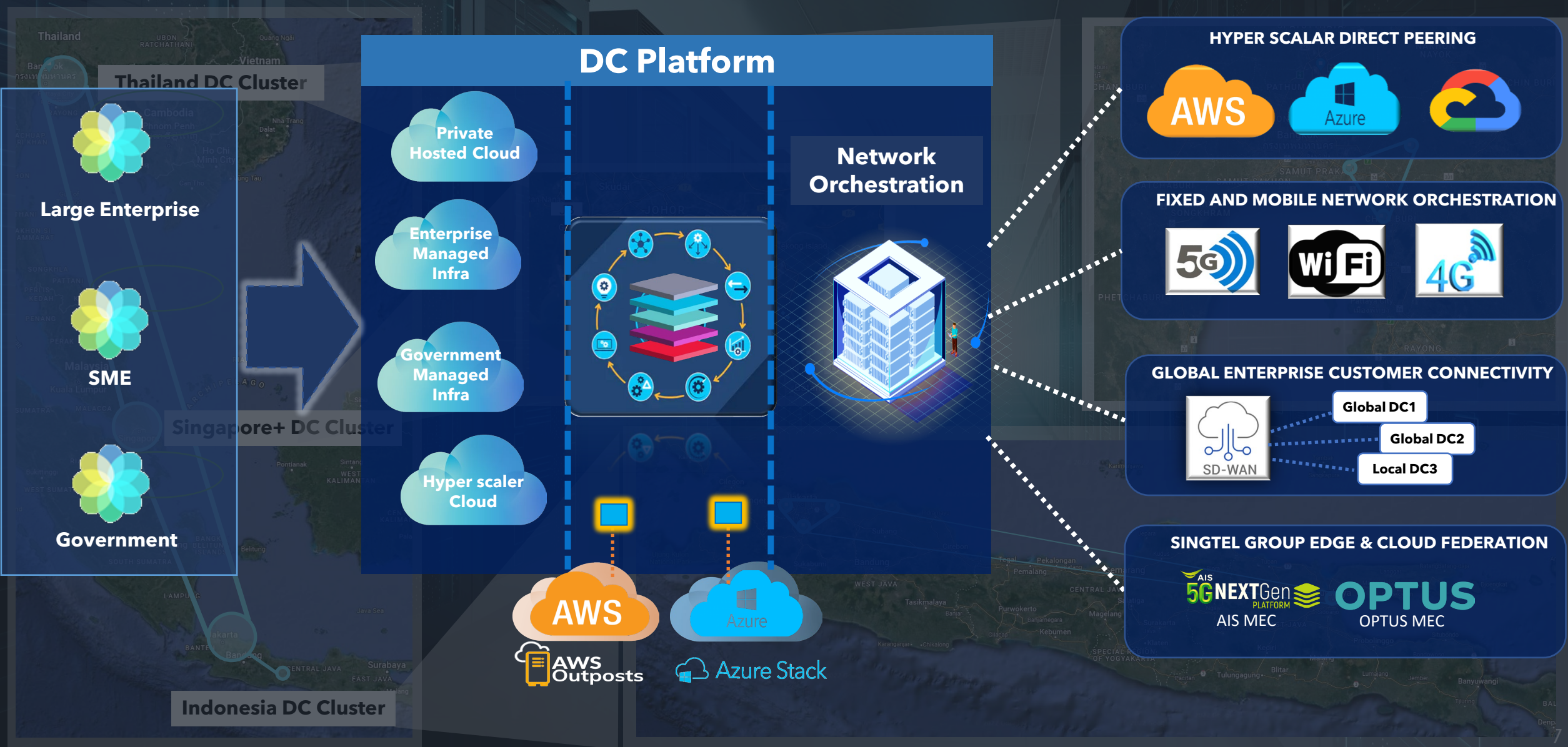**GEN 2**

Kim Chuan 2
PUE (design): 1.6
IT Power (MW): 21
TIA 942 DC Tier: Rated 4

GEN 1

Others (Gen 1 DCs)
IT Power (MW): 1.1 - 5
TIA 942 DC Tier: Rated 2 and 3

Building a Regional Connected DC Platform

Singtel

Thailand DC Cluster

Large Enterprise

SME

Government

Singapore+ DC Cluster

Indonesia DC Cluster

DC Platform

- Private Hosted Cloud
- Enterprise Managed Infra
- Government Managed Infra
- Hyper scaler Cloud

Network Orchestration

AWS
AWS Outposts

Azure
Azure Stack

HYPER SCALAR DIRECT PEERING

AWS   Azure   Google Cloud

FIXED AND MOBILE NETWORK ORCHESTRATION

5G   WiFi   4G

GLOBAL ENTERPRISE CUSTOMER CONNECTIVITY

SD-WAN

Global DC1

Global DC2

Local DC3

SINGTEL GROUP EDGE & CLOUD FEDERATION

AIS 5G NEXTGen PLATFORM
AIS MEC

OPTUS
OPTUS MEC

7

Regional DC Platform Plan

With strong Singapore base...

...propel into the region

Key Platform Goals

>100 MW[1]

Expansion in Singapore, ASEAN countries and Beyond

>100 MW[1]

Partnerships established in Thailand/Indonesia & potential Singapore pipelines

~60 MW (pipeline)

Pipeline in Singapore in next 3 years

>60 MW

Prime SG DC assets

Trusted regional one-stop shop

Single port of call for firms; standardised SLAs, interconnected DC capacity across the region

Carrier neutral with access to outstanding bundled services

Access to Singtel's wide ecosystem across connectivity, IT/managed services & cyber security

Greenest in the region

Leading operator of next gen green DC focused on sustainability

Strong partner network

Strategic, commercial and capital partners to scale optimally

1 JV Co Capacity for outside Singapore

8

Key Takeaways

Capital efficiency

- ✓ Strong capital management strategy
- ✓ Reallocating unlocked value to fuel further growth

Partnerships

- ✓ Capital
- ✓ Sustainable energy
- ✓ Local Engagement

Build on core

- ✓ Build on Singtel's DC capabilities
- ✓ Designing and Operating sustainable Green DC
- ✓ International network leadership