Quicktake

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Europe’s Data Centers demand has grown exponentially with the rise of content and cloud

KEY DC DEMAND DRIVERS

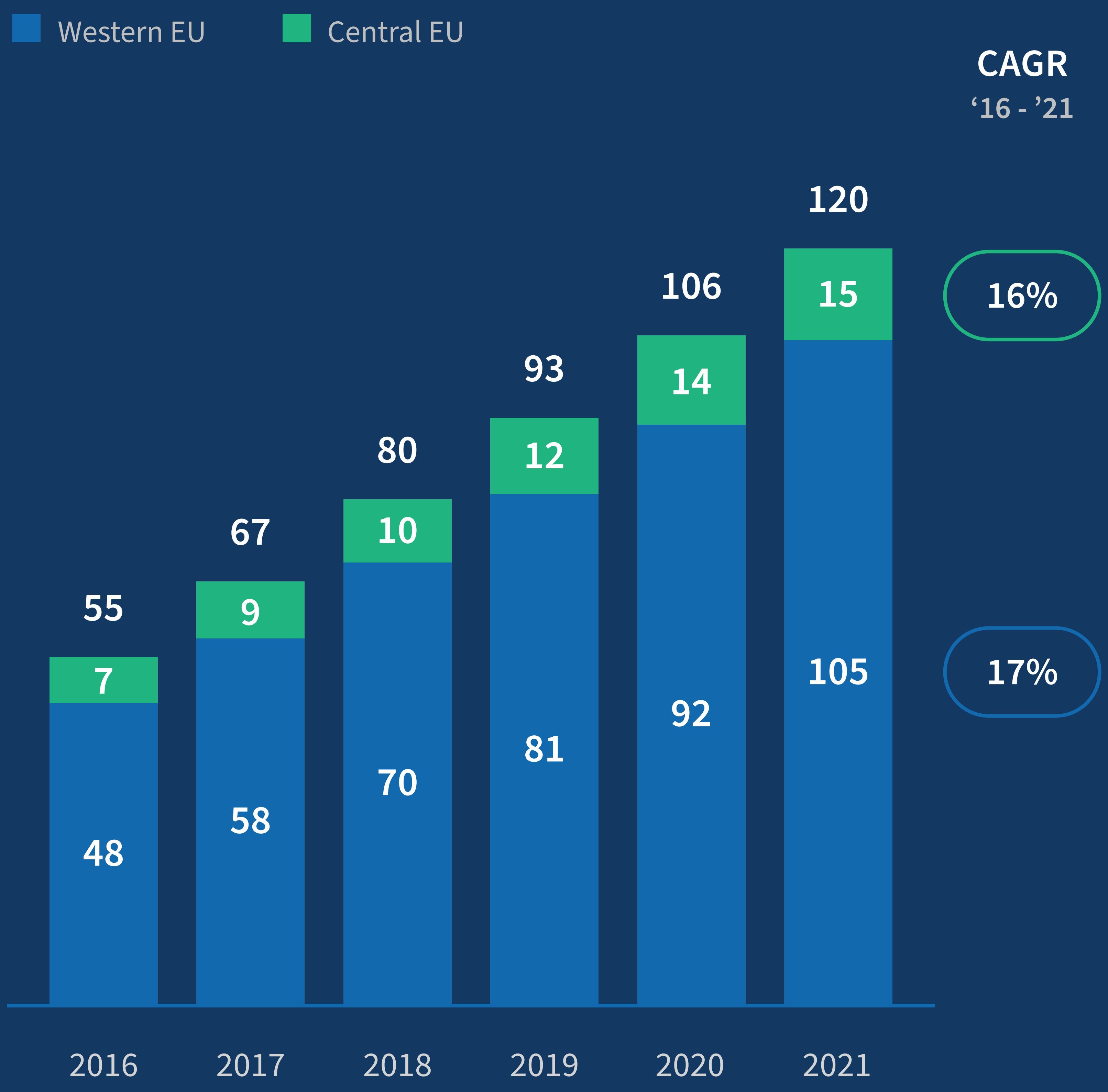
Move to the cloud

Demand for content (Video, social media)

Amazon Web Services
Azure
Google Cloud

Hyperscaler expansions

DC WORKLOADS - EUROPE
(mn)



Source: Cisco Global Cloud Index 2018
Note: A server workload and compute instance is defined as a virtual or physical set of computer resources, including storage, that are assigned to run a specific application or provide computing services for one-to-many users.

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We are observing a trend towards expansion in Tier II cities

FLAP-D

	Wave 1 Primary focus FLAP-D	Wave 2 Tier II city expansion begun	
	2007 - 2018	2019 - Today	Future
Amazon Web Services	Dublin 2007 Frankfurt 2014 London 2016 Paris 2017 Stockholm 2018	Milan 2020	Zurich 2022 Aragón 2022
Azure	Dublin 2009 Amsterdam 2010 Frankfurt 2016 London 2016 Paris 2018 Magdeburg 2016 Cardiff 2016 Marseille 2018	Berlin 2019 Zurich 2019 Geneva 2019 Oslo 2019 Stravaner 2019 Gävle 2021 Staffanstorp 2021	Vienna 2023 Brussels 2023 Copenhagen 2022 Helsinki 2024 Madrid 2022 Warsaw 2024 Milan 2022 Athens 2022
Google Cloud	St. Ghislain 2010 Hamina 2011 Dublin 2012 Eemshaven 2016	Amsterdam 2020 Federicia 2020 Madrid 2022	Berlin 2022 Turin 2022

Source: Company websites and Press Clippings

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Tier II cities present an attractive opportunity for further growth in the DC space

FAVOURABLE TIER II MARKET CONDITIONS

Cost & Availability of power

- Cost of power **approximately half** of FLAPD markets (0.125$/kwh vs 0.232 $/kwh)
- City grids less loaded (power capacity available)

Government incentives

- Governments are incentivizing DC developments
- Example lower **taxes and incentives for using RE** in:
  - Nordic markets: Reykjavik, Oslo & Stockholm
  - Marseille in France

Space availability & Location

- Several well positioned tier II city locations, e.g.

  Marseille – MENA subsea cable connectivity access strong, high-capacity links with southern France

  Oslo – government incentives and access to affordable energy, low cooling necessities and connectivity

Source: Cushman & Wakefield 2022 Global Data Center Market Comparison, Datacenterdynamics

We have narrowed down the Tier II opportunity to a selection of 18 cities on 6 key factors

FACTORS

- **Economy size**
- **Hyperscaler expansion plans**
- **Connectivity access** (NLD & International)
- **Gov. support** (incentives)
- **Renewable / low cost energy access**
- **Environ. conditions** (e.g., climate, natural disasters)

TOP 9 TIER II CITIES IDENTIFIED

City	DC Power installed (MW)	DC Power in the pipeline (MW)
Milan	13	116
Spain	55	99
Reykjavik	9	96
Zurich	39	89
Warsaw	18	72
Marseille	14	69
Berlin	19	62
Oslo	6	52
Stockholm	10	50

Source: Cushman & Wakefield 2022 Global Data Center Market Comparison, Datacenterdynamics

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We see four potential ways investors can take advantage of the trend

ii	iii	iv	v
Independent players (PE Backed & non-PE Backed)	**Telco-operator DC-owned assets**	**Real estate development approach**	**Renewable energy**
Players with smaller asset portfolios and pipeline of projects	Increasingly carving-out DC-assets into separate entities providing M&A op-portunities	Greenfield deployments through Real estate investment trusts or equivalent	Investment in the decarbonization of current and future DC operations
Green datacenter AG *LCL data centers* *Penta Infra,* *atnorth*	*Telefónica* *Zayo* *KPN*	*AQ Compute* *D/9 digital infrastructure* *Endeavour* *Merlin*	*Ficolo* *Nabiax* *NTT*
Opportunities for funding or acquisition from investment funds	Opportunities for majori-ty / minority investments in carve-out operations	High risk–return greenfield opportunities (invest-ments /JVs/partnerships)	Sustainability-linked debt (conservative investors or to fund growth) and green energy partnerships

Key questions arise for infrastructure players

1 What is the growth path ahead for FLAP-D?

2 Which secondary cities will emerge as key datacenter locations?

3 What are the key assets in these Tier II cities/markets?

FTI DELTA - FTI CONSULTING EXPERTS

Audi Pous
Senior Managing Director
audi.pous@ftidelta.com

Fabian Campo
Senior Managing Director
fabian.campo@ftidelta.com

Joao Sousa
Senior Managing Director
joao.sousa@ftidelta.com

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