

BATAM AT THE CLOUD EDGE

From Transit Corridor to Digital Hub

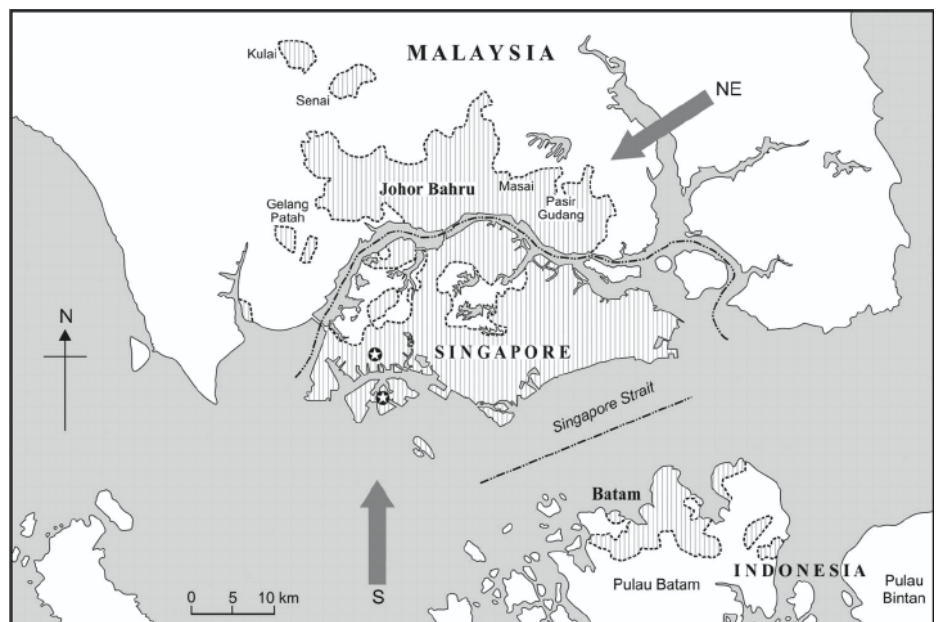
BY JESSICA HALIM

Batam is at a critical inflection point in Southeast Asia's digital infrastructure landscape. Strategically located less than 30 kilometers from Singapore, the island has begun to attract investments in new subsea cables and data center campuses as not only as a spillover destination but also as an emerging digital infrastructure site in its own right, supported by a growing domestic renewable energy sector and local Special Economic Zone (SEZ) advantages.

However, despite recent investor commitments in Batam such as Oracle's Indonesia North (Batam) region and NeutraDC's planned multi-phase hyperscale campus, major hyperscaler operators such as Amazon, Microsoft, and Google remain absent. This gap might be explained by Batam's growing interconnection capacity as a regional redundancy node, but still-limited role in cloud origination—the generation and hosting of enterprise and public-sector workloads locally, rather than simply relaying data across borders. At present, Batam's facilities seem to largely serve telcos and content delivery networks, with only one internet exchange provider, while latency-sensitive enterprise workloads remain clustered in neighboring Singapore or Kuala Lumpur.

Experiences from Johor, Dublin, and Northern Virginia demonstrate that transit hubs can successfully transition into a more self-sustaining origination role, provided the appropriate measures.

For Batam, six enabling conditions might be worth establishing to sustain its growth and unlock its potential as a long-term, commercially viable digital cloud hub: (i) reliable east-west connectivity through a carrier-neutral dark fiber backbone; (ii) cloud-specific regulatory framework with respect for domestic digital sovereignty; (iii) anchor demand seeding from both private and public sectors; (iv) availability of sustainable and predictable power through renewables and long-term power purchase agreements (PPAs); (v) development of neighboring Bintan as a complementary hinterland; and (v) capacity building for local talent and future workforce.



Map of Batam and Singapore¹

BATAM'S INFRASTRUCTURE BOOM

Batam has long been recognized as a manufacturing and logistics base within Indonesia's Riau Islands province, serving as a key industrial partner to Singapore. In recent years, however, its strategic geography, just 20 km across the Singapore Strait, has taken on new significance in the regional digital economy.

Over the past five years, global and regional operators including Telin, BW Digital, and GDS have accelerated deployments of digital infrastructure in Batam, often with a direct interface to Singapore's digital ecosystem. Multiple high-capacity cable projects have landed and are being planned on Batam with direct connections to Singapore's Tuas and Changi landing points, notably the Indonesia-Singapore Cable (INSICA) and the Nongsa-Changi system. On the terrestrial side, Batam has attracted investments from Singapore-based BW Digital, GDS, PDG, and other regional colocation operators for multi-phase data center developments clustered around its Nongsa Digital Park¹. Accordingly, Batam is the nationally designated driver of Indonesia's data center market growth², which is projected to reach USD3.63 billion in 2029 by Telecom Review Asia³.

The most immediate catalyst for this development was Singapore's moratorium on new data centers in 2019⁴ due to land/power constraints and environmental targets. During the process, Singapore restricted expansion in the city-state to a few projects meeting stringent energy efficiency and sustainability requirements. The moratorium was then lifted in 2023 with the launch of a pilot call-for-applications⁵ and a Green Data Centre Roadmap⁶ prioritizing capacity allocations to best-in-class "green" builds.

Today, efficient power, higher operating temperatures, and green finance have become new industry norms for Singaporean operators – for instance, Singtel⁷ secured a S\$643 million (US\$476m) green loan for its DC Tuas facility slated for 2026. However, the supply-demand gap for expansion by Singaporean operators remains, driving investors to look at proximate geographies – Batam as one of the foremost⁸.

INTERCONNECTION VS. ORIGATION

Due to its operator-led growth history, Batam's infrastructure footprint points to a pattern of an interconnection-driven, rather than origination-oriented, digital ecosystem.

Batam hosts more than a dozen subsea cables and multiple landing stations, alongside nearly ten colocation facilities concentrated around Nongsa. Six telco providers also maintain extensive cell tower networks on the island. Yet Batam has only one Internet Exchange Point (IXP) and, until very recently, no hyperscale cloud zones – major players such as Amazon Web

Services (AWS), Microsoft Azure, and Google Cloud remain concentrated in Singapore, Kuala Lumpur, or Jakarta.

This distribution suggests that Batam's data center facilities are primarily oriented toward operators such as telcos, content delivery networks (CDNs), and carriers whose business is to move data across borders (*interconnection*), rather than hyperscalers that facilitate enterprise or public-sector workloads which involve generating, processing, and storing data at scale (*origination*).

The distinction between *interconnection* and *origination* matters both commercially and strategically. Interconnection services – such as cross-connects and wholesale bandwidth – generate revenues that fluctuate with external traffic volumes, leaving operators exposed to demand conditions in neighboring markets. By contrast, origination workloads – such as enterprise cloud, Artificial Intelligence (AI), and public-sector digital services – create more stable, recurring revenues, while also embedding a location more firmly within regional value chains. Once hyperscale tenants anchor workloads locally, ecosystem multipliers typically follow: banks, Software-as-a-Service (SaaS) providers, FinTechs, and developers tend to cluster around cloud regions, generating stickier demand and deeper talent pools⁹.

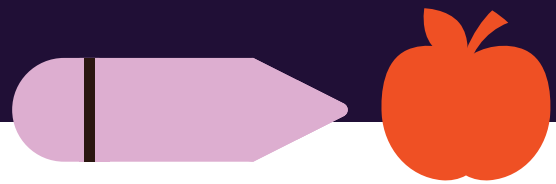
Without a pivot from interconnection to origination, Batam could risk being locked into a supporting role: valuable for providing redundancy but commercially limited, with margins tied to unpredictable cross-border demand from Singapore and little scope for stable, recurring revenues. This reliance might also carry strategic costs: continued dependence on external hubs would constrain Indonesia's digital sovereignty and weakens regional resilience by concentrating critical workloads in a handful of nearby locations.

Recent hyperscaler commitments offer cautious optimism. In July¹⁰, Oracle launched its *Indonesia North (Batam)* cloud region by leasing space in DayOne's data center at Nongsa Digital Park, marking Batam's first live hyperscale cloud deployment and demonstrating its viability as a host for hyperscale cloud services. In parallel, Telkom Indonesia's NeutraDC, in partnership with Medco Power, is developing a >60 MW solar-powered hyperscale campus in Kabil Industrial Estate, targeted for commissioning in late 2025¹¹.

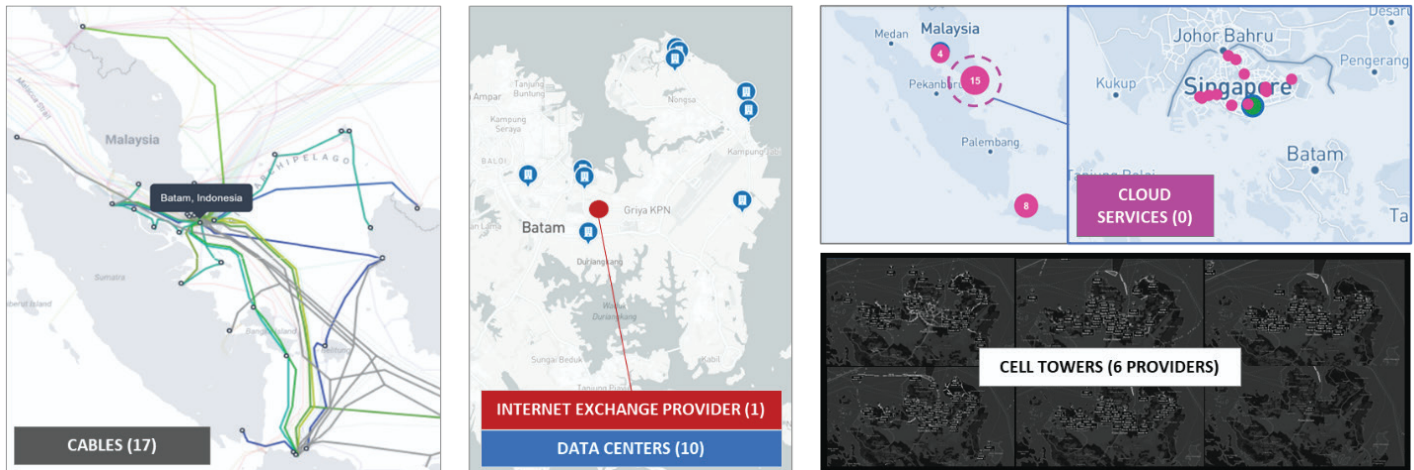
Together, these announcements indicate that Batam is beginning to attract cloud-native investments that are prerequisite to higher-value digital activity. The key challenge now might be whether such initial wins could be converted into a durable origination ecosystem.

STALLED AT THE CLOUD EDGE

Converting Batam's passive interconnectivity into active



Batam's Digital Infrastructure Inventory, as of June 2025²⁵



cloud origination is likely to require a multi-stakeholder effort that aligns commercial, technical, and policy conditions shaping hyperscaler investment. While Oracle's Indonesia North (Batam) deployment demonstrates that cloud services hosting is technically feasible in Batam, its leased, single-availability-domain setup contrasts with the multi-availability zone (AZ) cloud regions that typically anchor enterprise workloads.

As noted, Batam's growth to date has been driven by operators such as Telin and BW Digital, whose business models can tolerate operational uncertainties such as grid variability, staggered permitting processes, and custom interconnection arrangements. However, hyperscalers such as Amazon, Microsoft, and Google tend to only commit to building multi-AZ regions when three preconditions are in place: (i) a reliable, predictable, and increasingly renewable *power* supply; (ii) availability of a carrier-neutral dark fiber network for reliable east-west *connectivity* with enforceable service-level agreements (SLAs); and (iii) a critical mass of *demand* through enterprise or public-sector workloads.

*Data Center Dynamics*¹² echoes these requirements, highlighting robust networking infrastructure, the cost and availability of land and power, proximity to customers, ease of doing business, financial incentives, political stability, and low exposure to natural hazards as central determinants of hyperscaler location.

On many of these counts, Batam demonstrates potential advantages from its key characteristics¹³, which likely might have contributed to its appeal as a spillover destination from Singapore:

- proximity to Singapore, which allows for ultra-low latency;
- comparatively lower labor and land costs;
- rapid development of renewable energy sources¹⁴ including floating solar and gas-to-power projects integrated into the domestic and potentially a cross-border grid,

which can offer more sustainable, reliable, predictable, and affordable electricity than Singapore's own constrained grid;

- commercial incentives from its Special Economic Zone¹⁵ (Nongsa Digital Park) and Free Trade Area status, which include among others, tax deductions, import duty exemptions, streamlined licensing processes, as well as expedited piloting of regulations and infrastructure projects;
- direct access to Southeast Asia's largest and fastest-growing digital economy, Indonesia – which is projected to reach US\$260 billion by 2030¹⁶, with demand for cloud and data-intensive services already outpacing the country's current hyperscale readiness of roughly 200 MW¹⁷;
- relatively lower risk of natural disasters¹⁸ due to its location outside the Ring of Fire; and
- larger area of available land for further development of data centers and supporting facilities or infrastructure, with potential expansions into the neighboring Bintan island.

Despite these advantages, several critical structural gaps still constrain Batam's ability to move from a transit node to a true origination hub:

1. Multi-Zone Availability¹⁹

Large hyperscalers would only designate a location as a cloud "region" if resiliency can be guaranteed within national borders. This requires at least three separate AZs connected by ultra-low latency, carrier-neutral SLA-backed fiber with guaranteed uptime and performance. However, Batam's fiber networks currently are still fragmented and under construction.

2. Peering Fabric Density²⁰

Peering refers to the direct interconnection of networks so that data traffic can be exchanged locally without detouring through distant hubs. Rich domestic peering

fabrics are critical for latency-sensitive workloads such as financial transactions, AI training, or SaaS platforms. Batam's single Internet Exchange Point (IXP) limits interconnection diversity, which might force traffic flows to be routed through Singapore or Jakarta. This increases both delay and cost, weakening Batam's attractiveness for enterprises and public-sector clients that require fast, reliable local processing.

3. **Regulatory Certainty and Cloud-Specific SLAs**²¹

While Indonesia's GR 71/2019 and the 2022 Personal Data Protection (PDP) Law provide broad frameworks, their effectiveness hinges on implementation rules and the still-to-be-formed independent national PDP authority. For hyperscalers, the absence of enforceable standards on uptime, latency, and recovery creates operational uncertainty; for investors, this ambiguity translates into financing risk. Without predictable rules and SLAs, long-term commitments such as multi-decade power-purchase agreements (PPAs) or hyperscale campuses remain difficult to make bankable.

4. **Local Demand Anchors**²²

As mentioned, Batam's economy is still dominated by manufacturing and logistics rather than service-based sectors that generate "sticky" workloads. Government and municipal systems remain Jakarta-centered, while few multinationals base data-intensive operations in Batam. Unlike Singapore or Jakarta, the island lacks concentrations of banks, insurers, FinTechs, or AI clusters that normally catalyze hyperscaler investment.

CLOSING STRUCTURAL GAPS

Global precedents prove that the leap from transit to origination is achievable when land, power, regulation, demand, and finance are bundled into coherent strategies. For example, Johor²³ marketed itself as "Singapore-adjacent," pairing SEZ incentives with neutral interconnection fabric and framing itself as part of a binational ecosystem. Dublin²⁴ overcame its peripheral geography by leveraging renewable power and EU-aligned regulation.

For Batam, shifting from transit to origination would likely depend on whether policy, private sector operators, and investors can align around enabling conditions to attract and sustain hyperscale investments – six areas appear particularly relevant for consideration:

1. **Carrier-neutral Dark Fiber Backbone.** A carrier-neutral, SLA-backed dark fiber network linking multiple AZs in Batam – and potentially extending to Singapore – would provide a foundation for resilience. Government support in the form of rights-of-way, regulatory guarantees,

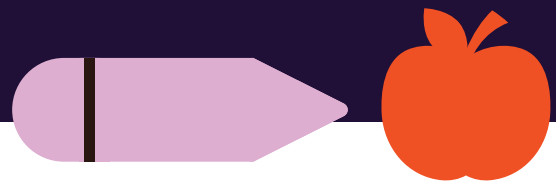
or PPP structures could be leveraged to ensure open, non-discriminatory access for private operators.

2. **Cloud-Specific Regulatory Framework.** A dedicated Batam Cloud SEZ rulebook covering (i) enforceable SLAs for uptime, latency, and recovery; (ii) standardized cross-border protocols (including harmonization with Singapore); and (iii) clear data residency requirements could give hyperscalers greater regulatory certainty.
3. **Anchor Demand Seeding.** Migrating select government systems, incentivizing enterprise adoption, and supporting AI/data-intensive services within Batam, particularly within the Nongsa Digital Park, could create the early "sticky" workloads needed to shift the nature of data traffic demand in Batam from transit to origination.
4. **Sustainable and Predictable Power.** Expanding renewable capacity such as floating solar, gas-to-power, and grid integration, and bundling cloud projects with long-term green power PPAs aligned to hyperscaler sustainability targets, could secure both cost efficiency and carbon competitiveness.
5. **Batam as a Hinterland.** Leveraging neighboring Bintan island as a complementary extension to improve resilience and reduce deployment costs, by hosting renewable-linked power assets, secondary data centers, and industrial or residential facilities on Bintan.
6. **Talent and Capability Development.** Expanding local training pipelines through partnerships between universities, operators, and technical institutes would help build a workforce capable of sustaining hyperscale operations and supporting the broader Indonesian digital economy.

ENDING NOTES

Batam's digital transformation is underway. Subsea cables, colocation campuses, and the first hyperscale deployments demonstrate that the island has already moved beyond the margins of Southeast Asia's connectivity map. The question now is no longer whether Batam can function as a transit node – it already does – but whether it can also originate the digital services that underpin long-term value. The answer would likely depend on how effectively Batam's existing and planned infrastructure is complemented by enabling conditions: reliable dark fiber, predictable regulation, renewable-linked power, anchor demand, integrated regional development, and a skilled workforce. If these elements progress in parallel, Batam could shift from its speculative "build-to-attract" growth pattern toward a more durable, demand-driven ecosystem.

The implications extend beyond Batam itself. For investors, clearer rules and bankable frameworks – including enforceable SLAs and long-term PPAs – could help reduce



financing and operating risks. For Indonesia, such a transition could strengthen digital sovereignty by anchoring critical workloads domestically. For Southeast Asia, it could enhance resilience through greater diversification of hubs, routes, and markets. For the industry, Batam would serve as proof of concept that a region can move from being a transit corridor to an origination hub, provided early hyperscaler commitments translate into durable ecosystem growth.

At the same time, Batam's long-term value might lie less in replicating Singapore's status as a full origination hub and more in cultivating a distinctive role of its own. Rather than chasing scale for its own sake, Batam could position itself as Singapore's digital twin for resilience, a spillover site for carbon-constrained workloads, or a proving ground for cross-border protocols and AI/IoT applications – enabled by niche models such as redundancy-as-a-service, green power-bundled campuses, or regulatory “cloud sandbox” pilots. The real test would then be whether these possibilities mature into a differentiated ecosystem: one that defines Batam not as an afterthought to Singapore, but as a laboratory shaping Southeast Asia's next generation of digital infrastructure. **ST**



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