EXECUTIVE SUMMARY

When Malaysia promulgated the Movement Control Order (MCO) at the peak of the COVID-19 outbreak in March 2020, dependency on telecommunications and broadband services increased overnight as people shifted to online services to purchase daily essentials and perform their daily tasks. Internet traffic increased up to 70% and usage moved to residential areas also increased up to 70%.

The existing networks were suddenly tested to the limits. Gaps in network coverage and service quality became apparent, with the average internet download speed reduced by nearly 40% and number of complaints increased by up to 70%.

Therefore, JENDELA was developed with a steadfast commitment to build a robust digital infrastructure to reinforce digital transformation and bridge the digital divide between the rural and urban communities (including the B40 communities) by empowering Malaysians with the requisite facilities, followed by skills to enable them to flourish in the digital economy.

JENDELA aspires to fibreise nine (9) million premises, expand 4G coverage to 100% of populated areas, and increase mobile broadband speed to 100 Mbps.

JENDELA JOURNEY

JENDELA is a five-year national digital infrastructure plan, starting from September 2020. Phase 1 of the plan (2020 – 2022) focuses on optimising existing resources and infrastructure for mobile and fixed broadband while Phase 2 (2023 – 2025) focuses on deploying 5G network services to boost digital connectivity nationwide.

Some notable milestones include federal recognition of telecommunications as a public utility and the adoption of Garis Panduan Perancangan Infrastruktur Komunikasi (GPP-I) by the respective state governments.
**JENDELA PHASE 1 ACTION PLAN**

MCMC and the telecommunication service providers carried out a total of eight (8) initiatives aimed at improving the overall connectivity. We have completed four (4) out of the eight (8) initiatives, with the remaining four (4) to be completed by the end of 2022. On top of this, four (4) initiatives have been deployed to policy support and harmonisation for the implementation of JENDELA.

These initiatives include fibreising premises, constructing new mobile towers, upgrading existing base stations, shutting down 3G networks, and other initiatives related to policy support and coordination. JENDELA Map was made available to the public in July 2021 to provide telecommunications service coverage availability by service providers and allow users to provide feedback.

The support of all stakeholders also enabled us to advance the planning and rollout of 5G services and satellite connectivity from Phase 2 to Phase 1. This helped address connectivity challenges in rural and remote areas. Selected parts in Cyberjaya, Putrajaya, and Kuala Lumpur currently enjoy 5G services after a successful rollout in December 2021.

**JENDELA Journey**

**Phase 1 (2020 - 2022)**

- **Fibre Connectivity**
  - 7.5 million premises passed

- **Mobile Broadband Speed**
  - from 25Mbps to 35 Mbps

- **4G Coverage**
  - from 91.8% to 96.9% in populated areas

- **3G Sunset**
  - Gradual retirement by 31 December 2021

- **Satellite Connectivity**
  - Improve mobile coverage in remote areas

- **5G Implementation**
  - Cyberjaya, Putrajaya & KL

**Phase 2 (2023 - 2025)**

- **Addressing Gap**
  - Utilising Fixed Wireless Access and other fit-for-purpose technologies

**Previously in Phase 2 and has been accelerated to Q4 2021**

**JENDELA has gained acknowledgment and approval at various national platforms. Some of them are:**

- JENDELA and GPP-I presented at Mesyuarat Majlis Perancang dan Fizikal Negara (MPFN) on 27 October 2020
- Announcement of JENDELA in MyDigital on 19 February 2021 and RMK-12 on 27 September 2021
- JENDELA, GPP-I and Telecommunications as 3rd Public Utility approved in Mesyuarat Majlis Negeri dan Kerajaan Tempatan (MNKT) on 3 March 2021
- Endorsement of ‘Telecommunications as a Public Utility’ by the Cabinet on 2 June 2021
- Amendment of the Telecommunication Act 1984 that includes the use of new G20 form approved by MNKT on 13 July 2021
- JET sent e-toolkit to SUK of 30 states in Semenanjung and IKU Kementerian Wilayah Persekutuan (KWP) on 13 August 2021 to gazette the approved UBBL amendment
JENDELA PHASE 1 PERFORMANCE

Jointly, MCMC and the industry exceeded the JENDELA targets for 2021. As of 31 December 2021, approximately 6.85 million premises have access to fibre broadband, while 95.4% of all populated areas have access to the 4G network. The mobile broadband speed has also increased to 37.30 Mbps, far exceeding its initial target of 35 Mbps in Phase 1 which was due for completion at the end of 2022.

Going forward, we anticipate a challenging journey to cover the remaining 1.5% of the targeted 96.9% of populated areas with 4G network coverage given their remote and interior geographical conditions.

Achievements

- 6.85 million Premises passed
- 37.30 Mbps Mobile Broadband Speed
- 95.4% 4G Coverage

Baseline

- 40.5 million Premises passed
- 25 Mbps Mobile Broadband Speed
- 91.8% 4G Coverage

JENDELA Phase 1 Target (end of 2022)

- 7.5 million Premises passed
- 37.30 Mbps Mobile Broadband Speed
- 95% 4G Coverage

* Based on monthly data from Ookla Global Speed Test Index

JENDELA 2021 Summary Report

JENDELA 2021 Summary Report

Upgrade 16,214 existing base stations at urban & suburban areas
Fiberise 352,101 premises
Satellite and 5G have been accelerated to Q4 2021 from the initial plan under JENDELA Phase 2
CIMS to be upgraded into a one-stop digital infrastructure databank
Integration of e-Spectra and CIMS Rakyat-centric Portal on Service Coverage Availability by SPs
Construct 940 new mobile sites in urban and suburban areas

Policy Support & Harmonisation

- Blanket approval by States and PBTs (based on the commencement of USP sites)
- Access to Federal-owned lands and buildings to develop digital infrastructure
- Digital infrastructure to be planned, deployed and treated as public utility
- Standardisation of electricity tariffs for communications services based on industrial rates

5G Demonstration

- 5G priming and planning for infrastructure to be 5G-ready
- 5G rollout to meet the National Aspirations

Satellite and 5G have been accelerated to Q4 2021 from the initial plan under JENDELA Phase 2

JENDELA Map

Already completed at 437 locations
Rollout in 3 locations – Cyberjaya, Putrajaya and KL
Satellite broadband at 839 locations

Upgrade 4,589 existing 2G/3G base stations to 4G to expand coverage and increase the speed
Sunset 3G network and migrate the spectrum for 4G technology use
Fiberise 1,245,452 additional premises
Construct 1,661 new sites across Malaysia to extend the mobile 4G coverage in rural and remote areas*
Fiberise 929,631 additional premises (already completed 277,530 premises passed in 2021)**

Blanket approval by States and PBTs (based on the commencement of USP sites)
Access to Federal-owned lands and buildings to develop digital infrastructure
Digital infrastructure to be planned, deployed and treated as public utility
Standardisation of electricity tariffs for communications services based on industrial rates

* The Notification of Award has been issued to successful tenderers
** Balance to be completed is 652,101 premises
OVERALL DIGITAL INFRASTRUCTURE PERFORMANCE

To enhance the overall digital infrastructure, JENDELA monitors and tracks three (3) key components: fibreisation of premises, upgrade of base stations, and number of new mobile towers built.

From January – December 2021, the industry players collectively fibreised 1.43 million premises, upgraded more than 13,000 base stations to 4G technology, and built 250 new mobile towers to enhance the overall digital connectivity and experience.

<table>
<thead>
<tr>
<th>Component</th>
<th>2020</th>
<th>2021</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premises Passed</td>
<td>456,757</td>
<td>1,424,142</td>
<td>1,890,899</td>
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<tr>
<td>New 4G Towers</td>
<td>930*</td>
<td>250</td>
<td>1,189</td>
</tr>
<tr>
<td>Base Station Upgrades to 4G Technology</td>
<td>16,367</td>
<td>13,807</td>
<td>30,174</td>
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<tr>
<td>Fixed Broadband Premises Passed</td>
<td>1,245,452</td>
<td>1,434,142</td>
<td>2,679,594</td>
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</table>

Note:
* 63 sites planned for 2020 were completed in 2021 and are reflected in the 2020 performance.
### PERFORMANCE FOR PREMISES PASSED

Telekom Malaysia (TM), the national connectivity and digital infrastructure provider, passed the most premises with fibre connectivity, followed by ALLO and TIME. Within a year, the service providers passed a total of 1.43 million premises, or 115.2% of its original target of 1.24 million, despite various COVID-19 restrictions.

### BASE STATION UPGRADES

The four (4) main mobile broadband service providers have upgraded a total of 13,807 base stations, or 110.5% of the original target. Most of the service providers exceeded their respective pre-set targets, with a minor shortfall from the effects of the flood and monsoon season. The respective service providers aim to complete the upgrades by the first quarter of 2022.
Similarly, the four (4) main mobile broadband service providers successfully achieved more than their respective targets for 2021, constructing a total of 250 new 4G towers (or 129.5% of the original target of 193 towers).

Summary of Service Providers’ Performance for New 4G Towers (Jan – Dec 2021)

<table>
<thead>
<tr>
<th>Service Provider</th>
<th>2021 Target</th>
<th>2021 Completed</th>
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</thead>
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<tr>
<td>CELCOM</td>
<td>200%</td>
<td>200%</td>
</tr>
<tr>
<td>DIGI</td>
<td>150%</td>
<td>150%</td>
</tr>
<tr>
<td>MAXIS</td>
<td>200%</td>
<td>200%</td>
</tr>
<tr>
<td>U MOBILE</td>
<td>224%</td>
<td>224%</td>
</tr>
</tbody>
</table>

Notes:
1. Delay in Kelantan was caused by inaccessibility due to flood
2. Delay in Pahang was due to supplier’s factory and warehouse were affected by flood, hence, the delivery of the equipment was also affected.

ACCESS VIA SATELLITE

To improve mobile coverage in rural and remote areas, JENDELA has identified 839 locations across eight (8) states – Johor, Kelantan, Negeri Sembilan, Pahang, Perak, Selangor, Sabah and Sarawak – to be provided with broadband wireless access via satellite.

Summary of Broadband Wireless Access via Satellite (as of 31 Dec 2021)

As of 31 December 2021, 437 out of the 839 locations are likely to experience improved mobile coverage. Progress in both Kelantan and Pahang were delayed due to the floods causing inaccessibility to remote locations in Kelantan and affected delivery of equipment to Pahang.

Notes:
1. Delay in Kelantan was caused by inaccessibility due to flood
2. Delay in Pahang was due to supplier’s factory and warehouse were affected by flood, hence, the delivery of the equipment was also affected.
JENDELA ACTION PLAN FOR 2022

As we enter the final year of Phase 1, MCMC and the industry will continue working diligently to fibreise the remaining 652,101 premises, build an additional 1,661 new 4G mobile sites and expand 5G services.
ADDRESSING ISSUES AND CHALLENGES

As the regulator, MCMC is tasked with supporting the industry in working with state authorities to address identified challenges and/or issues through policy coordination. In that aspect, we have influenced all local state authorities to adopt GPP-I and UBBL as standard.

Plans for 2022 under the policy coordination segment includes the facilitation of approval process for the digital infrastructure development permit fee and gazette of latest UBBL amendments at state levels.

Addressing Issues and Challenges through policy coordination at State level

- Recognition of communication infrastructure as the third public utility
- Adoption of Garis Panduan Perancangan Infrastruktur (GPP-I) at State
- Communication Infrastructure Permit Management (CIPM) system to monitor the status of communication structure permit
- Establishment of Majlis Digital Negeri or Jawatankuasa Infrastruktur Negeri to facilitate issues on the communication infrastructure development
- Facilitation of permit fee for the digital infrastructure development approval process. Target to present in Mesyuarat Menteri Besar dan Ketua Menteri (MBKM) in March 2022
- The latest UBBL amendment that includes the new G20 form at State are expected to be adopted by the States by end February 2022 (6 months after the letter was sent by JKT to States’ SUK in Semenanjung and KWP)
3G NETWORK SHUTDOWN

The 3G network shutdown initiative aims to enhance the national digital infrastructure by providing seamless coverage and consistent quality of experience for all. By shutting down the 3G network, the 3G spectrum will be re-farmed to optimise the 4G network for better mobile broadband experience. The network rationalisation will benefit everyone with improved capacity, data speeds and broadband coverage.

The shutdown of the 3G network is conducted with a ‘customer-first’ mindset.

As of 31 December 2021, the mobile network service providers have successfully migrated 79% of 3G customers (or approximately 1.7 million) to the 4G network and shutdown 80% of 3G carriers nationwide.

MCMC and the industry intentionally delayed shutting down the remaining 20% of 3G carriers due to the monsoon season, to ensure that affected families regain their footing without preventable network disruptions. On top of that, 21% of 3G customers who have been advised of the revised timeline decided to only migrate to 4G after all 3G carriers are shutdown.

Under the revised timeline, all 3G carriers will be shutdown by 31 March 2022.

The shutdown of the 3G network is conducted with a ‘customer-first’ mindset.

Note
1. The remaining 440,852 (21%) customers already contacted. Based on their feedback, they shall wait until total 3G network shutdown before migrating to 4G.
2. The delay of the remaining 203,374 (21%) carriers was due to flood and monsoon season. Target to complete the shutdown by 31 March 2022.
There are approximately 38.67 million mobile broadband subscriptions and 3.04 million fixed broadband subscriptions in 2021. Of the approximately 40 million subscriptions, the regulator only received a total of 200,675 network or connectivity related complaints between January and December 2021.

The complaints increased sharply in February and June as bandwidth demand heightened during the nationwide Movement Control Order (MCO). Comparatively, the number of complaints reduced significantly in the following months when restrictions eased up and Malaysians gradually returned to work and/or schools.

As of 31st December 2021, MCMC recorded 200,675 network complaints.
Overall, the availability and quality of 4G services remain as the primary concern reported by users as most of the reports highlighted poor or no 4G network coverage.

Almost all service providers registered a significant increase in the number of complaints received due to the implementation of MCO. It is apparent that the size of complaints received by the respective service providers is relative to their existing market size.
Johor Bahru recorded the highest number of complaints among the top 20 districts in Zone 1.

Based on our observation, locations with high population density and network utilisation experienced a drop in network quality.

### BY LOCATION

<table>
<thead>
<tr>
<th>Location</th>
<th>Amount</th>
</tr>
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<tbody>
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</table>

### INDUSTRY IMPROVEMENT PLAN

Given the situation, coupled with the shift in the overall internet usage patterns, MCMC recognised the need to simultaneously improve the infrastructure in urban areas.

Collectively, the industry has upgraded 2,661 existing sites and completed 86 new sites across Johor Bahru, Seremban, Petaling, Kuala Lumpur, and Klang.

### Service Provider District Completed Completed Upgrade 2021 In Progress TOTAL Completed New Site 2021 In Progress TOTAL

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<tr>
<th>Service Provider</th>
<th>District</th>
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<th>Upgrade 2021</th>
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<th>New Site 2021</th>
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</table>
RESOLVED CASES

MCMC and the service providers have addressed a total of 105 connectivity complaints that gained widespread media and public attention, and successfully resolved 24 cases (or 22.9%). 64 of the cases are currently in various stages of being addressed.

While JENDELA consistently delivered on its key targets, MCMC acknowledges the possibilities of technical glitches during the journey as well as device and application incompatibility. In that respect, the Commission will continue to engage and educate consumers on the right use of devices, ways to check and mitigate network disruptions as well as channels to submit feedback pertinent to connectivity issues.
Thank You