



Policy Mechanism for Security of National Vital Objects in the Telecommunications Sector in Indonesia

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ABSTRACT

Telecommunication infrastructure is part of critical infrastructure because it has a vital role in the community and affects the country's economy. Therefore, telecommunications infrastructure can be classified as a vital national object, requiring a particular security mechanism in its deployment. However, telecommunication infrastructure has different characteristics than other sectors, where the operation is fixed and mobile. Using a descriptive-analytical approach, data is obtained from benchmarks and interviews with resource persons from various fields through several Forum Group Discussion activities. Each telecommunications network operator can apply for National Vital Objects in the Telecommunications Sector based on the mechanism under the guidelines for determining the national vital object in the telecommunications sector stipulated through a Ministerial Regulation. The regulation covers various aspects, including the mechanism for determining, evaluating, fostering, and responsibilities of National Vital Objects in the Telecommunications Sector. In its implementation, the National Vital Objects in the Telecommunications Sector manager coordinates with various security parties, such as the Indonesian National Police. The implementation of the OVNT policy influences the business climate for telecommunications operations to remain conducive and telecommunications services can always support the development and strengthening of the national economy.

1. Introduction

The telecommunications sector has become part of the critical infrastructure. This is because the operation of telecommunications has become part of the activities that affect the lives of the Indonesian people and are controlled and managed to maximize welfare. The operation of telecommunications is also intended to strengthen national resilience and maintain diversity within *Bhinneka Tunggal Ika*. The operation of telecommunications is used to strengthen the national character, as outlined in *Pancasila*. State control of telecommunications is outlined in the policies and arrangements for telecommunications operations stated in Law Number 36 of the 1999 Telecommunications (Setiawan, 2015). These regulations and policies form the basis for telecommunications operations based on the spirit of strengthening the domestic Industry, strengthening the role of the private sector, and liberalizing the telecommunications sector.

The development of the economy and social life of the people of a region cannot be separated from the infrastructure system, which is one of the levers. Telecommunication infrastructure has a vital role in the country's economy. Moreover, in today's digital era, telecommunications services can be accessed by various levels of society to support various local, regional, and global business sectors. Various ICT services such as e-commerce, e-government, e-health, and e-education can no longer be separated from the lives of Indonesian people. (Tim Peneliti Puslitbang SDPPI, 2018)

Based on Statista data, the total transaction value on the Indonesian e-commerce market in 2020 touched USD 30.3 billion or grew by 49% in one year. In addition, internet service users will reach 202 million users and mobile connections up to 345 million in 2020 (Kemp, 2021). It shows the importance of the telecommunications infrastructure sector in supporting the national economy in the digital economy era. In the digital era, all aspects of the paradigm of social life will depend a lot on various technologies and digital application platforms. The Government is expected to be able to bridge these changes to produce a society that is more adaptive and productive in welcoming the digital era.

Telecommunication infrastructure is an essential part of development towards accelerating digital transformation in Indonesia. In the Draft Strategic Plan of the Ministry of Communication and Information Technology 2020-2024, developing safe and reliable infrastructure and connectivity with high-quality services is one of the Six Strategic Directions in creating an ecosystem towards Digital Indonesia, as shown in Figure 1. Then, to realize this, the role of all levels of society and collaboration with various institutions/agencies and related parties in making it happen (*Rencana Strategis 2020-2024 Kementerian Komunikasi Dan Dan Informatika, 2020*)

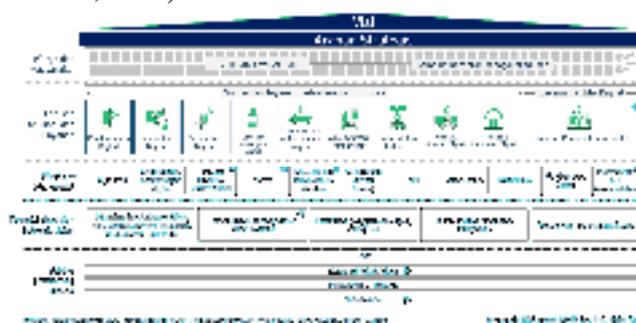


Figure 1 National Digital Transformation Policy Direction (*Rencana Strategis 2020-2024 Kementerian Komunikasi Dan Dan Informatika, 2020*)

In increasing the availability of ICT infrastructure that has easy access and affordable costs, the Government is trying to build various infrastructures that support various broadband technologies that have national coverage, including the construction of the Palapa Ring as a national backbone network, provision of BTS/eNodeB and internet access. In addition, the Government always encourages telecommunications network operators to increase the scope of their mobile and fixed broadband services to accelerate broadband penetration in urban, rural, and remote areas (Setiyawan, 2019). Therefore, the Government must ensure that all telecommunications network operations run smoothly and safely and that the development of telecommunications infrastructure is carried out efficiently and evenly throughout the country, as stated in Government Regulation 46 of 2021 concerning Post, Telecommunications, and Broadcasting.

Given how vital and strategic the telecommunications network infrastructure is in Indonesia, the telecommunications network is included in the category of national vital objects. It is under the Decree of the President of the Republic of Indonesia Number 63 of 2004 concerning Safeguarding National Vital Objects that National Vital Objects are areas/locations, buildings/installations and/or businesses that concern the livelihoods of many people, state interests and/or sources of state revenue that are strategic nature (*Keputusan Presiden Republik Indonesia Nomor 63 Tahun 2004 Tentang Pengamanan Obyek Vital Nasional Presiden, 2004*). In its implementation, the status of national vital objects must be determined based on ministerial decisions and/or heads of non-departmental government agencies. In the Presidential Decree, it is explained about the characteristics of national vital objects, including:

- a. Producing basic daily needs;
- b. Threats and disturbances against them are disastrous to humanity and development;
- c. Threats and disturbances against it disrupt transportation and communication nationwide; and/or
- d. Threats and disturbances against it result in disruption of the administration of the state government.

In practice, the institutions/agencies that manage National Vital Objects can coordinate with the Police of the Republic of Indonesia in providing assistance to secure national vital objects (*Peraturan Kepala Kepolisian Negara Republik Indonesia Nomor 24 Tahun 2007 Tentang Sistem Manajemen Pengamanan Organisasi, Perusahaan Dan/Atau Instansi/Lembaga Pemerintah*, 2007) includes:

- a. Obvitnas managers and POLRI determine the configuration of security standards (personnel & security infrastructure).
- b. Obvitnas managers must meet the quality or capability standards set by the KAPOLRI Decree and consider input from relevant agencies & and international provisions.
- c. The Obvitnas Manager and the POLRI carry out periodic audits of the existing security system according to the KAPOLRI Decree.

For the telecommunications sector, Presidential Decree No. 63 of 2004 allows telecommunications network operators to carry out telecommunications business activities properly and safely. Telecommunications network operators need security guarantees for all infrastructure, assets, and objects related to implementing telecommunications services when considering that threats and disruptions to telecommunications infrastructure occur pretty frequently and are capable of having impacts not only on a local provincial, or national basis, such as the interruption of fiber optic cable systems, disruption of the core network system, sabotage, and damage to physical telecommunications networks and so on (Reli et al., 2019).

However, telecommunications network infrastructure has different characteristics when compared to infrastructure in other sectors. Because telecommunication networks are built based on different implementations in the intermediary media characteristics, technology generation, architecture, hierarchy, and network topology to the scope of network services. In addition, the spread of each network element is extensive. For example, more than 500,000 BTS (2G, 3G, and 4G) spread throughout Indonesia and more than 224,583 km of land fiber optics and 123,859 km of marine fiber optics covering 502 districts/cities in Indonesia (Kementerian Komunikasi dan Informatika, 2020). So the mechanism for determining national vital objects must be carried out effectively and efficiently.

Determining the national vital object policy for the telecommunication sector is challenging. So an in-depth study is needed regarding the mechanisms, criteria, guidance, evaluation, and other matters relating to the determination of national vital objects in the field of telecommunications, the discussion on the study must cover various aspects, including theoretical aspects and empirical practice, subject matter, evaluation and analysis of legislation, philosophical, sociological, and juridical foundations, up to the scope, direction of regulation, and the scope of the material content of the law. It is hoped that this study will become the basis for the policy of determining national vital objects in the telecommunications sector to increase the contribution of the telecommunications sector to the national economy and continue to support the strategic plan for digital transformation in Indonesia. In addition, this policy is stipulated so that national vital objects in the Telecommunications Sector can be appropriately protected and the business climate for telecommunications operations remains conducive. Telecommunications services can always support the development and strengthening of the national economy and create legal certainty for protecting and securing national vital objects in the Telecommunications Sector.

2. Literature review

2.1. Existing Conditions of National Vital Objects

Article 30, paragraph 4 of the Constitution of the Republic of Indonesia emphasizes that the National Police of the Republic of Indonesia, as an instrument of the State that maintains security and public order, must protect, serve the community, and enforce the law. Article 5 Law no. 2 of 2002 concerning the Indonesian National Police, it is stated that the Indonesian National Police is a state instrument that plays a role in maintaining public security and order, enforcing the law, and providing protection, protection, and service to the community in the context of maintaining domestic security. Based on the 1945 Constitution

and Law no. 2/2002, POLRI has the duty and authority to maintain domestic security, including maintaining the security of national vital objects, which have a strategic role in implementing national development(Supartono et al., 2018).

Presidential Decree Number 63 of 2004 concerning the Security of National Vital objects Junto Law Number 2 of 2002 concerning the Indonesian National Police ordered the ranks of the Indonesian National Police to compile guidelines for the national vital object security system as an effort to provide protection, protection, and public service (Namudat et al., 2019). It was reinforced by the issuance of the Decree of the Chief of Police Number Pol: Skep 783/X/2005, which explained that vital objects are strategic areas, locations, buildings, installations, and businesses because disturbances to these national vital objects significantly affect the needs of the people and national interests.

The regulation regarding the security of national vital objects is intended to minimize and even prevent the impact of disturbances and threats to national vital objects, which can result in humanitarian disasters, disruption of Government, the threat to national security and defense, and what is most avoided is damage to the results of national development. The dimensions of threats and security disturbances are growing with various risks and impacts from time to time. The development of science and technology and the increasing complexity of social exclusion have given rise to various threats and disturbances to the security of vital national objects, such as airports, ports, fuel processing, storage and distribution, water supply systems, etc. The Bali bombing terror case, the bomb attack on the JSX Building, the Marriott Hotel, and the Australian Embassy prove that the escalation of threats and security disturbances in Indonesia has entered a massive (catastrophic) phase, resulting in financial losses, assets, and casualties. Security threats and disturbances to national vital objects ultimately directly or indirectly impact the national economic system and, to a certain degree, political stability, the state administration system, and the national security field (Setiyawan, 2019).

Based on the threats and security impacts mentioned in the Presidential Decree above, the sectors that can be categorized as national vital objects are telecommunications, transportation, financial and banking services, electricity, oil and gas, clean water supply, emergency service units, and government offices. Given its quite strategic role, national vital objects require a more robust security system based on strict security system standards to minimize security risks and impacts caused by threats and security disturbances. National vital object security system standards can be used to assess the achievement of the national vital object security system performance (*Peraturan Menteri Perindustrian No. 18 Tahun 2018 Tentang Pedoman Penetapan Dan Evaluasi Penetapan Objek Vital Nasional Bidang Industri*, 2018).

Presidential Decree No. 63/2004 also states that the standard configuration of security for each national vital object must meet the quality or capability standards set by the Indonesian National Police and carry out periodic audits of the security system according to the decision of the Head of the Indonesian National Police (Article 5). Based on Presidential Decree No. 63/2004, the Head of the Indonesian National Police issued the Chief of Police Decree No. Pol.: Skep/738/X/2005 concerning National Vital Object Security System Guidelines. The guidelines for the security system for national vital objects cover security patterns, configuration of security standards, standards for implementing security capabilities, management of security audits, and supervision and control. Even though Presidential Decree No. 63/2004 and Guidelines for National Vital Objects Security System, the implementation of the national vital object security system still needs to be investigated so that it is more optimal, how system standards have been set and the threat of security disturbances, such as the threat of a terrorist attack which has a severe impact on national security(*Peraturan Kepolisian Negara Republik Indonesia Nomor 3 Tahun 2019 Tentang Perubahan Atas Peraturan Kepala Kepolisian Negara Republik Indonesia Nomor 13 Tahun 2017 Tentang Pemberian Bantuan Pengamanan Pada Objek Vital Nasional Dan Objek Tertentu*, n.d.).

National vital object policies have been widely applied to various agencies and ministries. Several agencies or ministries have implemented vital object policies, including the Ministry of Energy and Mineral Resources, the Ministry of Industry, the Ministry of Foreign Affairs, the Ministry of Tourism, the Indonesian National Police, and others. The implementation of the national vital object policy at the

ministry is carried out to secure various essential assets for the continuity of businesses and activities that concern many people's lives. (UU No. 2 Tahun 2002 Tentang Kepolisian Negara Republik Indonesia [JDIH BPK RI], 2002)

In telecommunications, the security of telecommunications objects is essential for the interests of society and the State. Today, the telecommunications sector is part of critical infrastructure because it influences various sectors of public and state life on a regional and national scale. However, telecommunications objects and infrastructure are highly vulnerable to vandalism and theft. Some objects are even in conflict or strategic areas for the country.

The case that often occurs is the destruction of the submarine fiber optic cable communication system. As an archipelagic country, Indonesia has various communication networks for the communication needs of people in various directions. Apart from satellites, the submarine Cable Communication Channel located under the sea is also one of the backbones of the communication network to connect from one island to another. It is just that, for underwater cables, irresponsible parties, and ignorant hands often encounter damage or vandalism. This action disrupted the communication process of the people who depended on the underwater cable network (Pohan et al., 2019).

Therefore, considering the importance of telecommunications infrastructure networks for people's livelihood and the high level of vandalism and crime against telecommunications infrastructure, telecommunications infrastructure can be categorized as a national vital object under the provisions of the applicable law. It is hoped that with the policy of national vital objects in the telecommunications sector, all parties, both managers of vital objects and providers of security assistance, can work together. Thus, the telecommunications sector can contribute to society regarding social, economic, cultural, and national defense and security.

2.2. Concept of Security

According to Maslow's hierarchy of needs, security or security is included in the second basic need after biological and physiological needs, namely safety needs. The need for security and protection from things considered a threat. The need for this security is not only needed by each individual but also by groups, classes, and the industrial world. In the industrial world, the need for security is necessary to protect the assets of the business, which consist of human resources, equipment, and the production process of the industrial business itself. The security required is physical security (buildings, devices, equipment, production processes), personnel security (workers), and information security (secrets, company policy data).

In Article 4 of Law Number 2 of 2002 concerning the Indonesian National Police, it is stated that the purpose of the National Police is to realize internal security, which includes maintaining security and public order. As for public security and order in Article 1 Point 5, it is defined as a dynamic condition of society as one of the prerequisites for the implementation of the national development process in the context of achieving national goals, which are characterized by guaranteed security, order, and law enforcement, as well as fostering peace, which contains the ability to foster as well as developing the potential and strength of the community in deterring, preventing and overcoming all forms of law violations and other forms of disturbance that can unsettle the community.

Initially, the concept of security had a universal meaning, namely what is often referred to as security, and is only associated with the security of a country. Security is closely related to the military's defense of a sovereign state. At the most fundamental level, the word security means efforts to protect populations and territories against organized forces to advance the interests of the State through competitive means. In later developments, security has a broader meaning: being free from the danger of crime and all accidents. In more detail, the concept of security contains four basic meanings, namely (Neimeyer, 2001):

- a. Security is the feeling of being free from physical and psychological disturbances.
- b. Surety is the feeling of being free from worry
- c. Safety is the feeling of being protected from all harm.

d. Peace is the feeling of outer and inner peace.

(Djamin, 2004) Security is a state or condition of being free from physical and psychological disturbances, protecting the soul's safety and guaranteeing property from all kinds of threats, disturbances, and dangers. This security concept is very different from the initial understanding of security and refers more to the general security concept. The concept of order can be interpreted as a condition of society where its citizens can play a role under existing provisions in all functions and positions. Another term for public order is public order or law and order, but in its development, this term has expanded its meaning, which is related to order and security.

In later developments, namely since 1994, the concept of security has developed more broadly, with the emergence of the concept of human security by the United Nations Development Program (UNDP). This term has two meanings: (1) security from the threat of hunger, disease, and oppression, and (2) protection from sudden disturbances detrimental to daily life at home, work, or society. The Human Development Report identifies seven things that fall into the category of human security, namely: (1) economic security, (2) food security, (3) health security, (4) environmental security, (5) personal security, (6) community security, and (7) political security. Thus, human security focuses on humans (Cambone, 1998).

The concept of security in the study of national vital objects in the telecommunications sector is not related to human security but is more related to a state of being free from danger, which includes security, surety, safety, and peace. These four critical aspects must be considered in securing the work environment for the smooth running and comfort of the people who work there.

3. Method

In determining the policy mechanism for safeguarding national vital objects in the field of telecommunications, this study applies an analytical descriptive approach, which is a method that functions to describe or provide an overview of the object under study through data or samples that have been collected as they are without conducting analysis and making conclusions that apply to the public field (Sugiyono, 2017). The results of this approach are then attempted to draw legal principles to be translated into national vital object security policies in the telecommunications sector.

This research was conducted by the method of data collection and data analysis. The data needed can be in the form of primary data and secondary data. Primary data is data obtained directly from the first source. Meanwhile, secondary data is obtained from the search results of various related literature and references (Wahyudin & Hikmaturokhman, 2021).

The data collection method was carried out qualitatively through several methods, including:

- a. Focus Group Discussion gathers information about various wants, needs, viewpoints, beliefs, and experiences. In this activity, various experts were invited from a legal and technical perspective, and parties who have implemented national vital objects in other sectors, namely Energy and Mineral Resources and Industry.
- b. The interview is a meeting of two people to exchange information and ideas through questions and answers to construct meaning on a particular topic. In this study, the informants involved were competent in implementing national vital objects.
- c. Library/literature study is a review of laws and regulations, scientific journals, scientific articles, books, dictionaries, encyclopedias, or the results of research/studies that have anything to do with securing national vital objects in the telecommunications sector.

The data and information that have been collected are then analyzed descriptively. The data analysis stage begins with explaining the existing conditions of telecommunications operations security of telecommunications objects. Then, a benchmark study was carried out on other sectors implementing national vital object security policies, namely Energy and Mineral Resources and Industry. Finally, a policy mechanism for securing national vital objects in the telecommunications sector is designed by considering the telecommunications industry's technical, legal, and industrial characteristics.

4. Result and Discussion

4.1. Benchmark Studies

4.1.1. National Vital Objects in the Energy and Mineral Resources Sector

National Vital Objects in the Energy and Mineral Resources sector are determined based on the Regulation of the Minister of Energy and Mineral Resources Number 48 of 2018 concerning the Determination of National Vital Objects in the Energy and Mineral Resources Sector. This Ministerial Regulation regulates various aspects of national vital objects, from the mechanism characteristics to evaluation. Matters relating to the definition and characteristics of national vital objects still refer to Presidential Decree Number 63 of 2004 concerning the Security of National Vital Objects. Then, National Vital Objects in Energy and Mineral Resources are determined by the Decree of the Minister and/or Head of the relevant Non-ministerial Government Institution.

The national vital object sector is divided into 4 (four) sub-sectors based on the Directorate General at the Ministry of Energy and Mineral Resources, namely (*Peraturan Menteri Energi Dan Sumber Daya Mineral Republik Indonesia Nomor 48 Tahun 2018 Tentang Penerapan Objek Vital Nasional Bidang Energi Dan Sumber Daya Mineral*, 2018):

- a. Oil and natural gas sub-sector;
- b. Electricity sub-sector;
- c. Mineral and coal sub-sector;
- d. New renewable energy sub-sector and energy conservation

Determination of national vital objects in the Energy and Mineral Resources field can be carried out using two mechanisms: a mechanism for direct determination and a mechanism for determination through a proposal for a business entity or Permanent Establishment.

In the direct determination mechanism, the Secretary-General and the relevant Director General shall carry out an inventory and verification of areas/locations, buildings/installations, and/or businesses that meet the characteristics and criteria stipulated by the Ministerial Regulation.

Meanwhile, in the determination mechanism through proposals, business entities or permanent establishments may submit applications for the determination of national vital objects in the Energy and Mineral Resources Sector to the Minister through the Secretary-General with a copy to the relevant Director General. Furthermore, based on the request, the Secretary-General and the relevant Director General will carry out an inventory and verify the area/location, building/installation, and/or business.

Inventory and verification activities require factual data and information regarding the object and be verified or checked through field inspections conducted by the National Vital Object Team for the Energy and Mineral Resources Sector, where the Minister of Energy and Mineral Resources formed the team.

If the results of the verification carried out by the National Vital Objects Team for the Energy and Mineral Resources Sector state that the area/location, building/installation, and/or business has met the characteristics and criteria stipulated by the Ministerial Regulation, then the Minister determines that the area /location, building/installation, and/or business as National Vital Objects in the Energy and Mineral Resources Sector. However, if the characteristics and criteria stipulated by the Ministerial Regulation are not met, the Minister, through the Secretary-General, shall notify the application in writing.

Furthermore, the Manager of National Vital Objects in the Energy and Mineral Resources Sector is responsible for implementing the security of each national vital object based on the principle of internal security and carrying out obligations under statutory provisions.

In implementing the security of national vital objects in the Energy and Mineral Resources field, the Ministry of Energy and Mineral Resources has coordinated with various parties in securing vital objects such as the Police, TNI, the National Counterterrorism Agency, and the National Intelligence Agency.

4.1.2. National Vital Objects in the Industrial Sector

National Vital Objects in the Industrial Sector are determined based on the Regulation of the Minister of Industry of the Republic of Indonesia Number 18 of 2018 concerning Guidelines for the Determination and Evaluation of National Vital Objects in the Industrial Sector. This Ministerial Regulation regulates various aspects of national vital objects, from the mechanism and characteristics to evaluation. Matters relating to the definition and characteristics of national vital objects still refer to Presidential Decree Number 63 of 2004 concerning the Security of National Vital Objects. (*Peraturan Menteri Perindustrian No. 18 Tahun 2018 Tentang Pedoman Penetapan Dan Evaluasi Penetapan Objek Vital Nasional Bidang Industri*, 2018)

The Minister stipulates the determination of National Vital Objects in the Industrial sector through a Ministerial Regulation. In addition to designating Industry and/or Industrial Estate as National Vital Objects in the Industrial Sector, the Minister has the authority to evaluate the determination of Industry and/or Industrial Estate as National Vital Objects in the Industrial Sector. To be designated as a National Vital Object in the Industrial Sector, Industry and/or Industrial Estate must meet the criteria and requirements stipulated in Ministerial Regulation Number 18 of 2018.

In the context of implementing the determination of National Vital Objects in the Industrial Sector and evaluating the determination of Industries and/or Industrial Estates as National Vital Objects in the Industrial Sector, the Minister assigns Heads of Agency to:

- a. Conduct an assessment of the feasibility of designating an Industry or Industrial Estate as a National Vital Object in the Industrial Sector based on the criteria and requirements stipulated in this Ministerial Regulation; and
- b. Evaluate the fulfillment of recommendations for the determination of Industry or Industrial Estate as National Vital Objects in the Industrial Sector.

An Industrial Company or an Industrial Estate Company submits an application for designation as a National Vital Object in the Industrial Sector to the Minister through the Head of the Agency. The application must be accompanied by documents proving fulfillment of the requirements for either an Industrial Company or an Industrial Estate Company. When all documents have been submitted, the Head of the Agency forms a Verification Team to assess the feasibility of designating an Industry or Industrial Estate as a National Vital Object in the Industrial Sector based on the criteria and requirements.

Based on the verification results, the Head of the Agency submits a proposal for an Industry or Industrial Area deemed eligible to be designated as a National Vital Object in the Industrial Sector to the Minister. However, if based on the official report on the results of the verification of an Industrial Company or an Industrial Estate Company that is declared unfit to be proposed as a National Vital Object Company in the Industrial Sector, the Head of the Agency shall submit a letter of rejection of the application to the relevant Industrial Company or Industrial Estate Company. The Minister determines the proposal of the Head of the Agency in the form of a Ministerial Decree concerning the Determination of National Vital Objects in the Industrial Sector.

The Minister guides National Vital Object Companies in the Industrial Sector to improve the company's internal security capabilities through compliance and application of the standard management system for National Vital Objects in the Industrial Sector. Guidance is carried out on the following aspects,

- a. Managerial, in the form of fulfilling and implementing the standard management system for safeguarding National Vital Objects in the Industrial Sector by the National Vital Objects Company in the Industrial Sector; and/or
- b. Operational, in the form of increasing the internal security capabilities of National Vital Object Companies in the Industrial Sector.

In guiding National Vital Object Companies in the Industrial Sector, the Minister cooperates with the Head of the National Police of Indonesia. Managerial aspect development is carried out through fostering the preparation of standard documents for the security management system for National Vital Objects in the Industrial Sector by each National Vital Objects Company in the Industrial Sector I and fostering

compliance with standard management systems for safeguarding National Vital Objects in the Industrial Sector by each National Vital Objects Company in the Industrial Sector. The Minister stipulates the standard document for the security management system for National Vital Objects in the Industrial Sector.

The Minister assigned the Head of the Agency to carry out guidance on fulfilling the standards for the security management system for the National Vital Objects in the Industrial Sector I through an audit of the security system for the security management system for the National Vital Objects in the Industrial Sector. The Head of the Agency forms a team of auditors for the Industrial Sector National Vital Objects to conduct an audit of the security management system for the Industrial Sector National Vital Objects in each Company of the Industrial Sector National Vital Objects.

When all documents have been submitted, the Head of the Agency forms a Verification Team to assess the feasibility of designating an Industry or Industrial Estate as a National Vital Object in the Industrial Sector based on the criteria and requirements.

Based on the verification results, the Head of the Agency submits a proposal for an Industry or Industrial Area deemed eligible to be designated as a National Vital Object in the Industrial Sector to the Minister. However, if based on the official report on the results of the verification of an Industrial Company or an Industrial Estate Company that is declared unfit to be proposed as a National Vital Object Company in the Industrial Sector, the Head of the Agency shall submit a letter of rejection of the application to the relevant Industrial Company or Industrial Estate Company. The Minister determines the proposal of the Head of the Agency in the form of a Ministerial Decree concerning the Determination of National Vital Objects in the Industrial Sector.

4.2. Telecommunications Network Operation

The operation of telecommunications networks is regulated in Ministerial Regulation No. 1 of 2010 and Government Regulation No. 46 of 2021. This regulation explains that the operation of telecommunications networks is the provision and or service of telecommunications networks that enable the operation of telecommunications. Telecommunications Network Operations are divided into two types, namely Fixed Network Operations and Mobile Network Operations. Fixed Network Operations are divided into, (*Peraturan Pemerintah Republik Indonesia Nomor 46 Tahun 2021 Tentang Pos, Telekomunikasi, Dan Penyiaran, 2021*):

- a. Local Fixed Network Operations;
- b. Long Distance Direct Dial Fixed Network Operations;
- c. Operation of the International Connection Fixed Network;
- d. Operation of Closed Fixed Networks; And
- e. Implementation of Other Fixed Networks Determined by the Minister.

Implementation of Fixed Network Operations is carried out very broadly throughout Indonesia, connecting all levels of networks starting from backbone networks, backhaul to access networks using fiber optic/fiber optic technology and microwave radio communications (Hikmaturokman & Wahyudin, 2018).

Fiber optic technology is the key in today's telecommunications sector because, with its various advantages, it can become a media backbone network throughout Indonesia both on land and at sea. Implementing the Palapa Ring program by the Government is expected to boost the country's economy. Palapa Ring is a telecommunications infrastructure project in the form of fiber optic development throughout Indonesia along 36,000 kilometers. The project consists of seven small fiber optic rings (for Sumatra, Java, Kalimantan, Nusa Tenggara, Papua, Sulawesi, and Maluku) and one backhaul to connect them all (*BAKTI - Palapa Ring, n.d.*).

Fixed Network Operations are carried out by various types of telecommunications network operators such as NAP (Network Access Provider)/ ISP (Internet Service Provider), IXP (Internet Exchange Point) Providers, Submarine Cable Communication System Operators, and Microwave Link Point to Point Operators.

Meanwhile, Mobile Network Operations consist of 3 types of operation, viz

- a. Operation of Terrestrial Mobile Networks;
- b. Operation of Cellular Mobile Networks;
- c. Operation of Satellite Mobile Networks; And
- d. Implementation of Mobile Networks Determined by the Minister

Mobile Networks are implemented broadly throughout Indonesia, connecting all levels of the network, starting from the backbone network and backhaul to the access network. However, each type of mobile network provision has its characteristics and characteristics, starting from topology, coverage architecture, and other technical specifications. In addition, bearing in mind that the coverage of national vital objects in the telecommunications sector has a minimum coverage at the provincial level, the operation of mobile networks that fulfill this is the operation of cellular mobile networks and the operation of satellite mobile networks.

4.3. Technical Studies

4.3.1. Fixed Network Operations

NAP/ISP is a fixed network provider that can build its network starting from the core network and backhaul network to access the network. Today's core network technology at NAP/ISP uses GPON (Gigabit Passive Optical Network) combined with DWDM Fiber Technology to produce high transmission speeds. GPON is a new fiber-optic-based access device technology capable of delivering triple-play services more effectively and directly to customers. GPON is an FTTx-based network support technology that can deliver services to customers using an optical fiber (Sarah et al., n.d.). GPON is an access technology that is categorized as fiber-optic broadband access. This technology substantially increases bandwidth capacity by transporting data, video, and voice simultaneously in one device (triple play).

The GPON network architecture in NAP/ISP implementation is divided into three layers, among others,

- a. IP/MPLS (Internet Protocol/Multiprotocol Label Switching) network functions as the telecommunication system's switching center. This technology can transmit data packets on a high-speed backbone network.
- b. MetroE Network is a Metropolitan Area Network (MAN) network based on the Ethernet standard with a broader reach. In simple terms, this can be understood as an Ethernet technology with a broader scope.

Access Network uses GPON OLT technology, an endpoint hardware in a passive optical network (PON). OLT is closely related to FTTx, where FTTx is the installation and use of optical fiber from a central point directly to individual buildings such as residences, apartment buildings, and businesses to provide unprecedented high-speed internet access.

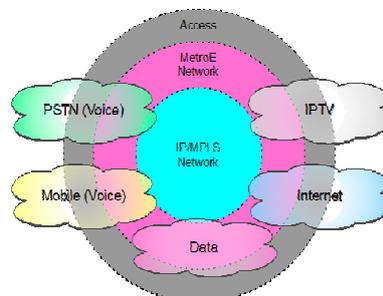


Figure 2 NAP/ISP Hierarchy (*Multi-protocol Label Switching (MPLS) untuk jaringan* | BINUS UNIVERSITY BANDUNG - Kampus Teknologi Kreatif, n.d.)

The topology used in the GPON network is a ring/loop topology, where each node is connected until it returns to that node. With this topology, it is hoped that the network recovery process will run without a hitch when there is a failure or damage to one communication line. With GPON technology, various

services, such as triple play services (Data, Voice, Video) (NUGROHO & SETYANUGROHO, 2019), can be implemented. Ring topology is applied at all levels of the network hierarchy, from core to access, as shown in the figure. The ring hierarchy on NAP/ISP networks using GPON technology is as follows:

- a. Core ring or backbone ring, is a network that connects IP/MPLS backbone nodes. This ring covers several provinces using fiber optic technology with a capacity of up to $N \times 100$ Gbps.
- b. The edge ring is a derivative of the core ring that connects metro nodes and collects traffic from several aggregation rings. This ring covers up to one province using fiber optic technology with a capacity of up to 10-100Gbps.
- c. An aggregation ring is a derivative of an edge ring that connects metro nodes and collects traffic from several access rings. This ring has coverage from one to several cities using fiber optic technology with a capacity of up to 10 Gbps
- d. The access ring is a derivative of the aggregation ring that connects OLT nodes and collects user traffic. This ring has coverage from one to several residential areas/buildings using fiber optic technology with a capacity of up to 1-10 Gbps.

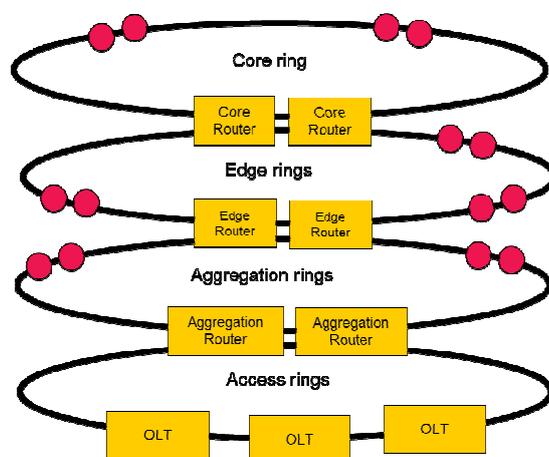


Figure 3 GPON Architecture (Saifuddin, M. Zen; Sardju Achmad P.; Nuryaningsih, 2017)

4.3.2. Operation of Mobile Networks

In the operation of mobile networks, the operations that meet the characteristics and characteristics of national vital objects in the telecommunications sector are the operation of cellular mobile networks and the operation of satellite mobile networks.

Limits and criteria for national vital objects can be reviewed based on the architecture of each technology, such as 2G (GSM), 3G (UMTS), and 4G LTE. The cellular network architecture is generally divided into three system parts: user devices, access network systems, and switching network systems (Wahyudin et al., 2017).

The access network system on 2G technology is called the Base Station System (BSS), which consists of a Base Transceiver Station (BTS), which is the interface between the user and the cellular system, and the Base Station Controller (BSC) which functions to control the work of the BTSs under it and as connecting BTS and MSC (Wibisono, 2008). In 3G technology, it is called UMTS Terrestrial Radio Access Network (UTRAN), which consists of Node B and Radio Network Controller (RNC), which have the same function as BTS and BSC.

The switching network system in 2G technology is the Mobile Switching Center (MSC), a central network element whose role is to interconnect speech links between cellular and other networks such as PSTN and data. Whereas in 3G technology, the switching network system consists of a Gateway GPRS Support Node (GGSN) and a serving GPRS support node (SGSN), which have other advantages besides having a switching function on the network as well as connecting to a Packet Data Network (PDN) such as the internet (Wahyudin et al., 2014).

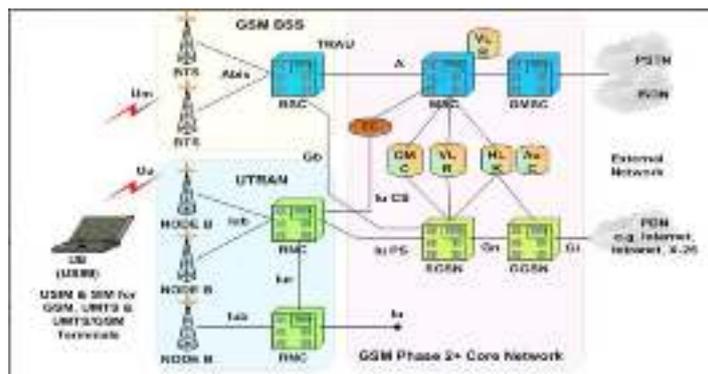


Figure 4 2G/3G Architecture (Wibisono, 2008)

4G technology has a slightly different architecture, where there is an e-Node B, which functions as an interface between the user and the system and as a traffic controller between e-Node B. Meanwhile, the LTE core network is called Evolved Packet Core (EPC) which consists of a Mobile Management Entity (MME) that functions like an MSC on GSM technology, a Serving Gateway (SGW) as a gateway for data packets originating from 3GPP and non-3GPP networks, and a Packet Data Network Gateway (P-GW), which is an edge router between EPS and external packet data network (WAHYUDIN et al., 2019).

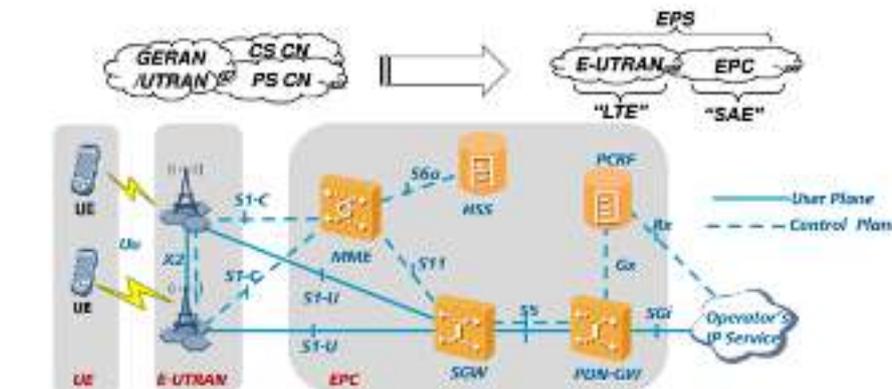


Figure 5 4G Architecture (Wardhana et al., 2016)

4.4. Law Studies

Article 30, paragraph 4 of the Constitution of the Republic of Indonesia emphasizes that the National Police of the Republic of Indonesia, as an instrument of the State that maintains security and public order, must protect, serve the community, and enforce the law. Article 5 Law no. 2 of 2002 concerning the Indonesian National Police stated that the Indonesian National Police is a state instrument that plays a role in maintaining public security and order, enforcing the law, and providing protection and service to the community in the context of maintaining domestic security. Based on the 1945 Constitution and Law no. 2/2002, POLRI has the duty and authority to maintain domestic security, including maintaining the security of national vital objects, which have a strategic role in implementing national development (Supartono et al., 2018).

Presidential Decree Number 63 of 2004 concerning the Security of National Vital Objects, in conjunction with Law Number 2 of 2002 concerning the Indonesian National Police ordered the ranks of the Indonesian National Police to compile guidelines for a national vital object security system as an effort to provide protection, protection and community service. This was reinforced by the issuance of the Decree of the Chief of Police Number Pol: Skep 783/X/2005, which explained that vital objects are areas, locations, buildings, installations, and businesses that are strategic because disturbances to these national vital objects significantly affect the needs of the people and the interests of the people. national level (Namudat et al., 2019).

In Article 4 of Law Number 2 of 2002 concerning the Indonesian National Police, it is stated that the purpose of the National Police is to realize internal security, which includes maintaining security and public order. As for public security and order in Article 1 Number 5, it is defined as a dynamic condition of society as one of the prerequisites for the implementation of the national development process in the framework of achieving national goals, which are characterized by guaranteed security, order and law enforcement, as well as fostering peace, which contains the ability to foster as well as developing the potential and strength of the community in deterring, preventing and overcoming all forms of law violations and other forms of disturbance that can unsettle the community.

Initially, the concept of security had a universal meaning, namely what is often referred to as security, and is only associated with the security of a country. In later developments, the concept of security has a broader meaning, which refers to being free from the danger of crime and all forms of accidents (Ardiyanti, 2018).

4.5. Security Mechanism for National Vital Objects in the Telecommunications Sector

Regarding terminology, national vital objects in the telecommunications sector are areas/locations, buildings/installations, and/or businesses that concern the livelihoods of many people, state interests, and/or strategic sources of state revenue in the telecommunications sector.

The policy on Determining National Vital Objects in the Telecommunication Sector is implemented to maintain a conducive business climate for telecommunications operations. It has a central and strategic role in running the wheels of the economy and administration of Government. It is necessary to stipulate telecommunications facilities and infrastructure as national vital objects. Telecommunications networks and services have also become part of Indonesian society in the present and the future. Thus, any disturbances and threats to the telecommunications network infrastructure can disrupt stability and the national economy. Based on the considerations described above, it is necessary to stipulate a Regulation of the Minister of Communication and Informatics Concerning Guidelines for Determining National Vital Objects in the Telecommunication Sector.

4.5.1. Criteria for National Vital Objects in the Telecommunications Sector

In determining the criteria for national vital objects in the field of telecommunications, they still refer to Presidential Decree No. 63 of 2004 but are adjusted to the characteristics of the telecommunications industry. Telecommunications Objects are declared strategic and can be designated as national vital objects in the field of telecommunications in terms of fulfilling the following criteria:

- a. threats and harassment against them result in disaster for humanity and development;
- b. threats and disturbances against it result in communication breakdowns nationally; and/or
- c. threats and disturbances against it result in disruption of the administration of the state administration

In addition to the above characteristics, technical specifications must be considered in terms of capacity and coverage in determining national vital objects in the telecommunications sector. In terms of the area coverage of a national vital object in the telecommunication sector, it is not necessary to be able to cover the provincial to national level so that technical specifications adjust to these provisions. Therefore, the technical provisions for fulfilling the criteria are as follows:

- a. For fixed telecommunications network operators:
 - 1) on the core network transmission capacity of at least 100 GB/s;
 - 2) On an Aggregation network, the minimum transmission capacity is 10 GB/s;

- 3) on a submarine cable network with a minimum specification of 24 cores or a transmission capacity of 10 GB/s.
- b. For mobile telecommunications network operators:
 - 1) Core network operational capacity of at least 100,000 subscribers or data capacity of at least 10GB/s;
 - 2) The central controller earth station has the function of satellite and communication controllers.

4.5.2. Procedures for Determining National Vital Objects in the Telecommunications Sector

Regarding procedures for determining national vital objects in the telecommunication sector, Telecommunications Operators shall apply to the Director General to determine National Vital Objects in the Telecommunication Sector. Furthermore, the Director General forms a Team of National Vital Objects in the Telecommunications Sector comprising various elements from the Ministry of Communication and Information Technology and/or other ministries/agencies. The National Vital Objects Team in the Telecommunications Sector oversees inventory, verification, recommendation, and evaluation.

In carrying out field verification, the National Vital Objects Team in the Telecommunications Sector may request the assistance of accompanying personnel from Ditpamobvit to observe the basic capabilities of national vital objects based on aspects of human resources securing Telecommunications Objects, and/or infrastructure facilities for securing Telecommunications Objects.

Based on the Verification Result Report, the Director General recommends determining National Vital Objects in the Telecommunication Sector to the Minister. and if it is declared unfit to be proposed as a National Vital Object in the Telecommunications Sector, the Director General shall send a letter of rejection to the Telecommunications Operator. Then, the Minister determined national vital objects in the telecommunications sector.

4.5.3. Evaluation of the Determination of National Vital Objects in the Telecommunications Sector

The National Vital Objects Team in the Telecommunications Sector can evaluate the determination of National Vital Objects Managers and Telecommunications Sector on follow-up recommendations for improving the basic capabilities of national Vital Objects carried out by the National Vital Objects Manager in the Telecommunications Sector, based on an assignment letter issued by the Director General of Post and Information Technology Operations. In carrying out the evaluation, the National Vital Objects Team in the Telecommunication Sector can involve accompanying personnel from Ditpamobvit.

Evaluation of the Determination of National Vital Objects in the Telecommunications Sector can be carried out incidentally if there are problems based on reports from the Manager of National Vital Objects in the Telecommunications Sector. These problems include:

- a. Problems resulting from changes in Area/Location for Managers and National Vital Objects in the Telecommunications Sector;
- b. Problems due to changes to the technology of the National Vital Objects in the Telecommunications Sector;
- c. Problems due to Force Majure against National Vital Objects in the Telecommunications Sector

4.5.4. Development of National Vital Objects in the Telecommunications Sector

The technical mechanism for fostering the security of national vital objects refers to the Chief of Police Regulation No. 13 of 2017 concerning the Provision of Security Assistance to National Vital Objects and particular Objects. The regulation regulates various technical aspects of security ranging from security configuration standards, and audits to the necessary security measures. Meanwhile, the Chief of Police Regulation No. 24 of 2007 concerning Security Management Systems for Organizations, Companies,

and/or Government Agencies/Institutions is a technical guide in the Management System for safeguarding national vital objects.

4.5.5. Obligations of National Vital Object Managers in the Telecommunications Sector

As long as they have status as National Vital Object Managers in the Telecommunications Sector, Telecommunications Operators are obliged to carry out provisions for fostering the internal security capabilities of national vital objects and assistance in safeguarding national vital objects by the Indonesian National Police based on applicable laws and regulations. Apart from that, the National Vital Object in the Telecommunications Sector must submit a report in writing every 1 (one) year or at any time if necessary to the Director General, including:

- a. Internal security activities carried out;
- b. Progress in implementing recommendations as stated in the Verification Results Report;
- c. Threats and/or security disturbances that occur and their security;
- d. Changes in the name of the Telecommunications Operator, organizational structure, activities, area/location, building/installation, including infrastructure;
- e. Prepare standard documents for the security management system for the management of National Vital Objects in the Telecommunications Sector; And
- f. Other information required

4.5.6. Administrative Sanctions for Determining National Vital Objects in the Telecommunications Sector

In terms of implementing sanctions, administrative sanctions will be imposed on the Manager of National Vital Objects in the Telecommunications Sector in the form of:

- a. First Written Warning,
- b. Second Written Warning, and;
- c. Revocation of Management Status and National Vital Objects in the Telecommunications Sector

The Director General of Post and Informatics and the Minister carry out administrative sanctions based on recommendations from the Director General of Post and Informatics.

4.5.7. Period for Determining National Vital Objects in the Telecommunications Sector

Determination of Telecommunications Operators as Managers of National Vital Objects in the Telecommunications Sector and Telecommunications Objects as National Vital Objects in the Telecommunications Sector is valid for 5 (five) years. The National Vital Object Manager in the Telecommunications Sector is responsible for the progress of the company's internal security management for a while. The Manager of National Vital Objects in the Telecommunications Sector may apply for an extension of the status of determination of National Vital Objects in the Telecommunications Sector no later than 6 (six) months before the end of the period for determining National Vital Objects in the Telecommunications Sector.

5. Conclusion

The culmination of this study underscores the critical importance of safeguarding the telecommunications infrastructure, defining it as a National Vital Object within the Telecommunications Sector. The vulnerability of this infrastructure to threats and disruptions poses a substantial risk to societal and economic stability, necessitating its formal recognition and protection.

The establishment of the Ministerial Regulation serves as a cornerstone in fortifying the telecommunications sector. It delineates meticulous guidelines for identifying and safeguarding National Vital Objects in the Telecommunications Sector. This regulatory framework not only fosters a conducive

business climate for telecommunications operations but also ensures the continual support of telecommunications services towards the country's economic development.

The core of the regulation are multifaceted mechanisms encompassing procedures for determination, evaluation, development, and the obligations conferred upon these recognized National Vital Objects. Telecommunication Operators are entrusted with meeting stringent technical provisions to fulfill the criteria stipulated for National Vital Objects in the Telecommunications Sector.

The determination of these vital objects, outlined through a Ministerial Decree upon the Directorate General's recommendation, signals a coordinated effort between government entities. Furthermore, the collaboration between the Ministry of Communication and Information Technology, National Vital Object Management, the Indonesian National Police, and the TNI underscores a comprehensive approach to security and guidance implementation.

The obligation imposed on Telecommunication Operators, serving as National Vital Object Managers, mandates the enhancement of internal security capabilities. This responsibility extends to assisting in safeguarding these vital objects, aligning with pertinent laws and regulations set forth by the Indonesian National Police.

In summary, the conclusions drawn from this research emphasize the imperative nature of safeguarding telecommunications infrastructure by designating it as a National Vital Object within the Telecommunications Sector. The regulatory framework, collaborative efforts, and stringent obligations collectively aim to fortify the sector's resilience and contribute to the nation's enduring economic growth and stability.

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