

# Design Of Human Resource Security And Physic Security Data Center With ISO/IEC 27002:2005 Standardization And TIA-942 Standardization With PPDIOO Method At DISKOMINFO Pemerintah Kabupaten Bandung

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**Abstract:** Data center have an important role in organization, namely as an ICT infrastructure, and as an important asset issued by organization. Existence of data center as an important role in organization, need policies Human Resources (HR) security and physical security, to create data center that have a sense of security and quality in order to support continuity of ICT services in organization. Dinas Komunikasi Informatika dan Statistik (DISKOMINFO) Pemerintah Kabupaten Bandung, based on current condition of available data center can be classified in category of server space and not have a very significant readiness for policy implementation HR security and physical of data center. Based on current condition, it is necessary to analyze the suitability of current condition related of HR security and physical security of data center, with ISO/IEC 27002:2005 standardization, TIA-942 standardization, and relevant legal regulations, using Prepare, Plan, Design, Implement, Operate, and Optimize (PPDIOO) network life cycle Method with use of stages up to design phase. The results of research proposed are drafting policies of HR security and physical security of data center in accordance with ISO/IEC 27002:2005 standardization, TIA-942 standardization, and relevant legal regulations

**Index Terms:** Data Center, DISKOMINFO Pemerintah Kabupaten Bandung, HR Security, Physic Security, ISO/IEC 27002:2005, TIA-942, PPDIOO Method

## 1 INTRODUCTION

The world in hand, is a slogan that illustrates how rapid the development of ICT at this time. The existence of ICT has its own role in several areas of life such as education (e-education), government (e-government), and finance banking [1]. To support the existence of ICT and the continuity of ICT implementation in an organization, it takes an ICT infrastructure that is useful for centralized data storage, is the information processing facility here in after referred to as the data center. Data center is a strategic component of the organization that places important assets from business, applications, data and computing infrastructure [2]. The existence of data center of course, able to perform continuous operations, adapt to the latest technological developments and growth, and apply security both physical and non physical, so that is existence free from all threats both physical and non physical [3]. In addition, the data center should have design and planning that takes into account minimum aspects such as safe locations, qualified civil buildings, geology, vulcanology, topography, protected with backup systems for power systems, air/environmental and data communications, and implementing standard data center governance including standard operating procedures, standard maintenance procedures, standards and disaster recovery and mitigation plans, as well as business continuity guarantee standards [3]. The Government of the Republic of Indonesia, through the Ministry of Communication and Informatics (KEMENKOMINFO) issued a ministerial temporary ministerial or 2013 Ministerial Regulation (RPM) Regulation on "Data Center Technical Guidelines". Contains general provisions, technical design requirements and implementation, operational requirements, and activity sustainability requirements [4]. Based on the contents of the RPM, the data center technical guidelines refer to standardized design and implementation of national and international data centers, and

the government requires that every organizer of electronic systems for public services be required to place data centers [4]. Bandung Regency Government, is one of the government agencies in West Java Province, which has issued Regent Regulation Bandung Regency Number of 17<sup>th</sup> 2016 About "Governance of ICT Infrastructure in Bandung Regency Government" [5]. As well as Bandung Regency Bandung Number of 18<sup>th</sup> of 2016 Regarding "ICT Manage Governance in Bandung District Government" [6]. Under these two rules, it discusses the planning, management, development and maintenance of ICT infrastructure and services, and the role of IT human resources in the planning, management, development and maintenance of ICT infrastructure and services. In conclusion from some previous discussions, the data center properly has policies for the management and security of human and physical resources. This needs to be done, to improve the quality of data center performance, as an important ICT infrastructure and organizational asset. The management and security of human resources and physical data centers is also an example of the application of information security aspects, which are generally implemented in data centers, namely confidentiality, data integrity and availability, information) [7]. The research object of research goals on the scope of DISKOMINFO Pemerintah Kabupaten Bandung, which formed based on Local Regulation (PERDA) Bandung Regency Number 12<sup>th</sup> Year 2016 About "Formation and Composition of Regional Device". Attached to Chapter II of Part Two of Article 4 letter d point 13, which contains "DISKOMINFO conducting governmental affairs in the field of communications and informatics, government affairs of statistics and government affairs in the field of coding" [8]. Under current conditions, the available data centers belong to the category of server space. This is supported, with no significant readiness for the implementation of HR and physical data center security policies that have not met ISO /

IEC 27002: 2005 standardization, TIA-942 standardization, and relevant legal regulations, hereinafter referred to as research study. The result of observation on the current condition has resulted, there is no access to physical control entry, with the application of the key of industry level and card access, not the application of fire protection system in some important point, there is no quality improvement and competency of IT personnel in the data center and no room for access to and out of goods, which are physically separated by the data center space at DISKOMINFO Government of Bandung Regency [9]. Based on the current conditions, a current condition of conformity analysis is required, with a study review. In this research, a research method is needed to determine the framework, and research model that is appropriate to the problem proposed in a study. This research uses the research method of PPDIIO, with the use of phases up to the design stage which refers to the study study. The PPDIIO method is a network design methodology presented consisting of Prepare, Plan, Design, Implement, Operate, Optimize, stages that reflect the life cycle of the network [10]. Goals of research conducted to produce the results of research in the form of, the analysis of the suitability of the current conditions with study studies, and propose the security policy of human resources and physical data centers

## 2 LITERATURE REVIEW

### 2.1 ISO/IEC 27002:2005 Standardization

International standards that set general guidelines and principles for initiating, implementing, maintaining and improving information security management within an organization [11]. In this research, the clauses implemented are the human resources security clause, and physical security.

### 2.2 TIA-942 Standardization

The TIA-942 standardization is an American national standard that defines the requirements and guidelines for a data center or computer space infrastructure, which includes the design of Telecommunications, Architectural, Electrical, and Mechanical [12]. In this research, the standard design policy that will be applied is the architectural policy (Administrative Offices, CCTV, CCTV Monitoring, Entry Lobby, Security, and Security Access Control / Monitoring At), and on the mechanical policy (Fire Suppression and Shipping and Receiving Area).

### 2.3 Relevant Legal Regulations

The following is a discussion of the relevant legal regulations, with this research :

1. Minor ministerial temporary regulations - RPM MENKOMINFO Year of 2013 About the Data Center Technical Guidelines.
2. PERBUP Kabupaten Bandung Number of 17<sup>th</sup> of 2016 on Governance of ICT Infrastructure in Bandung Regency Government.
3. PERBUP Kabupaten Bandung Number of 18<sup>th</sup> of 2016 on the Governance of Human Resource ICT in Bandung District Government Environment.

## 3 RESEARCH METHODOLOGY

### 3.1 PPDIIO Methodology

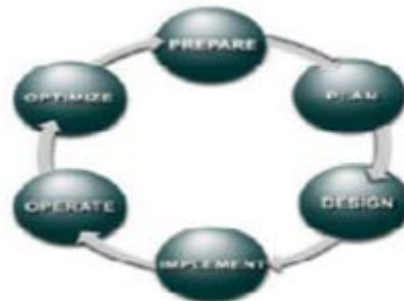


Figure 1 PPDIIO Research Methodology

In this research, the research method used only use three stages of method, that is:

#### 1. Prepare Phase

At this stage the fulfillment of business requirements and technology vision in accordance with the company's strategy in developing technology.

#### 2. Plan Phase

At this stage, determining whether the condition of infrastructure, and the system to be developed in accordance with operational environmental conditions, and at this stage required competent human resources in the field.

#### 3. Design Phase

At this stage the related organization develops a design related to the infrastructure technology to be developed, and must be in line with the business, technological vision, operational environment conditions, human resource competencies

### 3.2 Conceptual Method

The conceptual model according to functionality, is a concept that has relevance to literature studies to assist researchers in solving problems [13]. In this conceptual model described the model and systematic research on the Design of Human Security and Physical Data Center with ISO / IEC Standard 27002: 2005 Standardization and TIA-942 Standardization with PPDIIO Method On DISKOMINFO Pemerintah Kabupaten Bandung

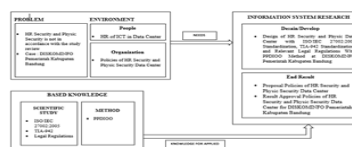


Figure 2 Conceptual Method of Research

The picture above shows that the conceptual model of this research begins with the current condition is in the form of existing problems with people, and organization that exist in place of case study object that is in DISKOMINFO Pemerintah Kabupaten Bandung, and with study study. With the method of PPDIIO as a research method with the limitation of the use of

phases, namely Prepare Phase, Plan Phase, and Design Phase, to assist the continuity of research. To evaluate and result of this research of Final Task made policy proposal and result of approval of security policy proposal of human resource and physical data center according to study.

#### 4 ANALYSIS & PROPOSE DESIGN

The following is attached table of the results of the analysis and the table of proposals, as a benchmark analysis and research proposal Final Task conducted :

No	Study Discussion	Total Study Discussion	Total of existing	Total for fulfillment	Total discussion which is not appropriate	Total of mid-term	Total of long-term
1	ISO/IEC 27002:2005 Standardization HR Security	33	27	6	0	2	4
2	ISO/IEC 27002:2005 Standardization Physic Security	71	37	34	1	0	33
3	TIA-942 Standardization Tier-1 - Architectural	36	24	12	0	12	0
4	TIA-942 Standardization Tier-1 - Mechanical	5	3	2	0	2	0
5	TIA-942 Standardization Tier-2 - Architectural	36	18	18	0	0	18
6	TIA-942 Standardization Tier-2 - Mechanical	5	1	4	0	0	4
7	Minor ministerial temporary regulations - RPM MENKOMINFO Year 2013	36	17	19	3	2	14
8	PERBUP Kabupaten Bandung No. 17 of 2016	11	10	1	0	1	0
9	PERBUP Kabupaten Bandung No. 18 of 2016	8	5	3	0	3	0

Figure 3 Benchmarks for Existing Research Analysis Results

No	Proposed Recommended Recommendation Name	Total Proposed Recommendations Fulfillment	Recommendation Time for Implementation
1	Discussion of recommendations on training proposals and certification of personnel competence for IT human resources in national standard data centers refer to Standar Kompetensi Kerja Nasional Indonesia (SKKNI)	4 discussion of recommendations	Medium Term
2	Discussion on recommendations for implementation of ISO / IEC 27002: 2005 standard human resource security in HR security clause during employment, for sub clause of training, education, and information security awareness.	2 discussion of recommendations	
3	Discussion of recommendations on the proposed TIA-942 standardization design for tier-1 on architectural and mechanical policies.	14 discussion of recommendations	
4	Discussion of recommendation recommendation of application of PERBUP Kabupaten Bandung No. 17 of 2016 About Governance of ICT Infrastructure in Bandung Regency Government.	1 discussion of recommendations	

Figure 5 Benchmarks for Target Research Analysis Results

#### 5 CONCLUSIONS

After analyzing the data in the form of comparison table of current condition with study study, and research proposal related to human resources and physical security of data center, as a refinement of research of Final Task conducted, summarized thoroughly following. Analysis of ISO / IEC 27002: 2005 standardization of human resources security comparisons, there are 6 annotations that have not met for the implementation of human resources and physical security data centers. As has not been implemented for sub clause of training, education, and awareness of information security, asset recovery, and removal of permissions The analysis of ISO / IEC 27002: 2005 standardization of physical security produces comparison, there are 30 annotations that have not been fulfilled for the implementation of human resources and physical security data centers. As it has not been implemented

for physical security perimeter sub-clauses, physical access control access, threat protection, public access areas and shipping and loading of goods, device placement, support devices, wiring security, device maintenance, off-site safety and removal of goods. Analysis of standardization of TIA-942 for tier-1 resulted in comparison, there are 14 annotations that have not yet met for the design of human resource and physical security of the data center. As yet unavailable for fire protection systems in some places, the adoption of multiple security locks at the main entrance, and the application of industry-level keys to important spaces. The analysis of standardization of TIA-942 for tier-2 resulted in comparison, there are 22 annotations that have not been fulfilled for the design of human resource and physical security of the data center. As is not yet available for fire protection systems in some places, physical security media of CCTV devices, application of physical security staff for placement in security activity control room, implementation of security activity control room along with physical security media, special monitoring room for third party, glass application 180 degree, monitoring and monitoring application with intrusion detection for several places, application of security unit for physical monitoring, application of security equipment room, and application of card access for physical access control entry to data center room. Analysis of RPM MENKOMINFO Year of 2013 Concerning Technical Guidelines for Data Centers provides comparison, there are 16 annexes attached to chapters and paragraphs that have not been fulfilled for the application of human resources and physical security of data centers. As the lightning protection system has not been applied, the application of generator devices for power backup power, and the application of design and analysis of fire protection system design by IT human resources in the data center. The analysis of the discussion of the Bandung Regency Border provides a comparison, there is 1 appendix of discussion on the number 17 of 2016 and 3 annexes in the number 18 of 2016, which has not fulfilled the application for the application of IT human resources competency development in the data center. Analysis of the proposed human resources and physical data center security policies that have been adjusted to the recommendations of the proposed time with consideration of adjustment of the first year plan as the medium term. And recommended time of proposal with consideration of adjustment of second year of planning, as long term for planning and development of data center forward recommended by author. An analysis of the results of the approval of the human resources and physical data center security policy proposals, based on the medium and long term, attached to annex VII and annex VIII. Shows that the proposed HR and physical data center security policy has been approved by DISKOMINFO Pemerintah Kabupaten Bandung for adjustment of first year planning (Year 2016-2021) and for adjustment of the second planning year (Year 2022-2027).

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