Positive Analysis and Exploration of Green Economic Model and Smart Management on Economic Progress in the Context of Big Data

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Abstract. In recent years, our government has frequently mentioned the need to do a solid job of carbon peaking and carbon neutral work, in this context, it is particularly important to adhere to the concept of low-carbon green. Standing at the starting point of the new era, green development has become an important trend. The introduction of this concept not only helps to solve the problem of harmonious coexistence between man and nature, but also applies the concept of green development to all aspects of human life, which is conducive to the construction of a resource-saving and environment-friendly society, thus enabling the harmonious development of economy, society, and ecological environment. For a long time, as China's economy continues to grow and people's wealth continues to increase, the ecological environment has been damaged, which has seriously hindered the coordinated development of economy and environment in China, especially in resource-based regions. In recent years, the diversification of customer needs and the explosive growth of data traffic have made it difficult for traditional network frameworks and technologies to meet the current network environment. Therefore, network virtualization and resilient optical inter-data center networks were created to better support customer business needs. Network virtualization enables dynamic allocation and management of resources in the network by enabling multiple independent coexisting heterogeneous virtual networks to share the underlying physical resources, greatly increasing network resource utilization. Resilient optical data center interconnection network with high speed, high capacity, variable granularity, scalability, and other characteristics can well meet the requirements of the new generation of transmission network.

Keywords: Big data · Green economy · Intelligent management · Network Virtualization

1 Introduction

China's economy has developed rapidly under the influence of reform and opening up, and the people's living standard has gradually improved [1]. However, in today's rapid economic development, the contradiction between the environment and the economy is becoming more and more prominent. To achieve the goal of green and sustainable

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development of our economy, we need to change the form of economic development and make the economy achieve high quality development [2]. Harmonious coexistence of man and nature, coordinated and sustainable development of economy and environment is the necessary way to achieve high-quality economic development in China [3].

2 An Empirical Study on the Factors Influencing the Efficiency of Green Economy Development

2.1 Selection of Indicators of Factors Influencing the Efficiency of Green Economic Development

By comparing the efficiency of green economic development among various cities and towns in Xinjiang, it is found that there are significant differences in the level and trend of green economic development efficiency among regions. The efficiency of green economic development is a combination of many factors [4]. Education level, foreign trade level and energy consumption to study the influencing factors of green development level, as follows.(1) government support; (2) economic development water; (3) degree of energy consumption.

2.2 Model Introduction and Variable Description

2.2.1 Tobit Model Introduction.

The model is estimated using the great likelihood method, which can better avoid the problem of inconsistency and bias in the parameter estimation process [5], and the specific model expressions are as follows:

$$y_i \begin{cases} y_{i^*} = x_i\beta + \varepsilon, y_{i^*} > 0 \\ 0, y_{i^*} \leq 0 \end{cases}$$

Among them. x_i denote the explanatory variables, y_{i^*} denotes the explanatory variable, β denote the regression parameters, ε denotes the random perturbation term [6].

2.3 Empirical Analysis of Influencing Factors

2.3.1 Descriptive Statistics.

By compiling data on seven influencing factors indicators of green economic development efficiency in Xinjiang from 2008–2019, descriptive statistics were conducted [8], and the results are shown in Table 1.

Table 1. Statistical description of impact factor indicators, 2008–2019

	Average value	Maximum value	Minimal value	Standard deviation
Percentage of general public budget expenditures (%)	0.3939	1.4241	0.0250	0.3189
GDP per capita (million yuan)	4.4433	18.8857	0.3928	3.4326
Value-added ratio of secondary production (%)	0.0528	1.1235	-2.1503	0.2432
Tourism revenue share (%)	0.0841	0.7826	0.0000	0.1079

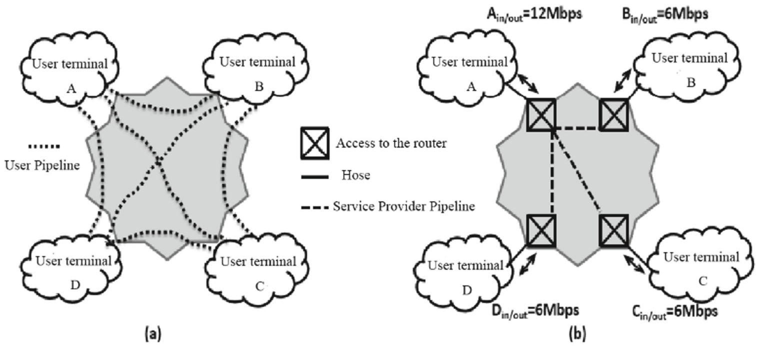

Fig. 1. Pipe model and hose model

3 Network Virtualization and Resilient Optical Data Center Inter-networking Under the Hose Model

3.1 Network Virtualization Under the Hose Model

3.1.1 Hose Model

As shown in Fig. 1: Figure (a) represents the pipe model with four user terminals, each connected to the other user terminals by a user pipe, and the tolerable bandwidth between user terminals is determined; Figure (b) represents the hose model based on user terminal A implemented by the service provider pipe, which has four user terminals.

3.1.2 Network Virtualization

The architecture of Y.3011 Optical Network Virtualization published by the ITU Telecommunication Standards Bureau (ITU-T) is shown in Fig. 2.

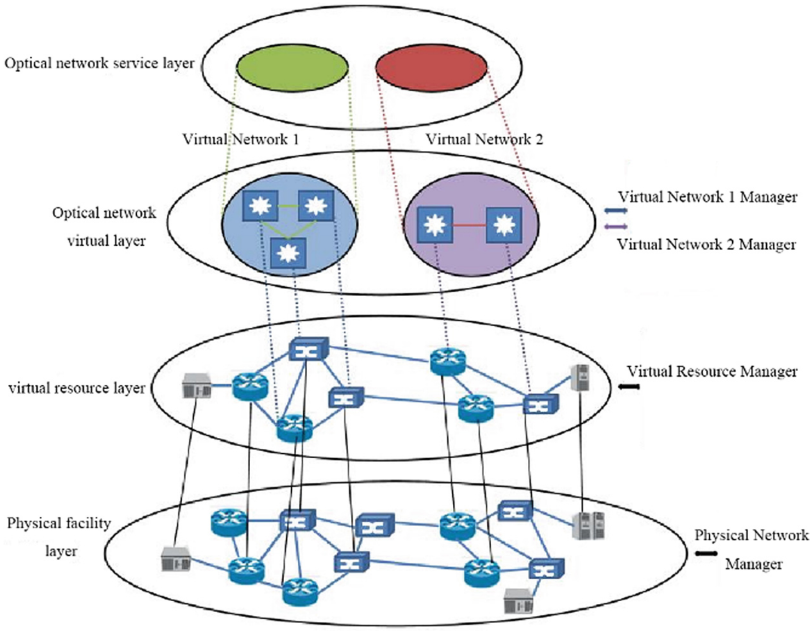

Fig. 2. Architecture of Y.3011 optical network virtualization

3.1.3 Network Virtualization Under the Hose Model.

As shown in Fig. 3(a) are firstly transformed into pipeline model virtual requests in Fig. 3(b) and secondly the transformed pipeline user requests are deployed into the physical network in Fig. 3(c) (Fig. 4).

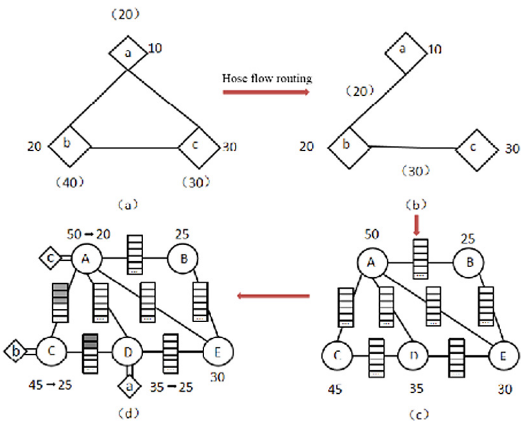

Fig. 3. Network virtualization steps under the hose model

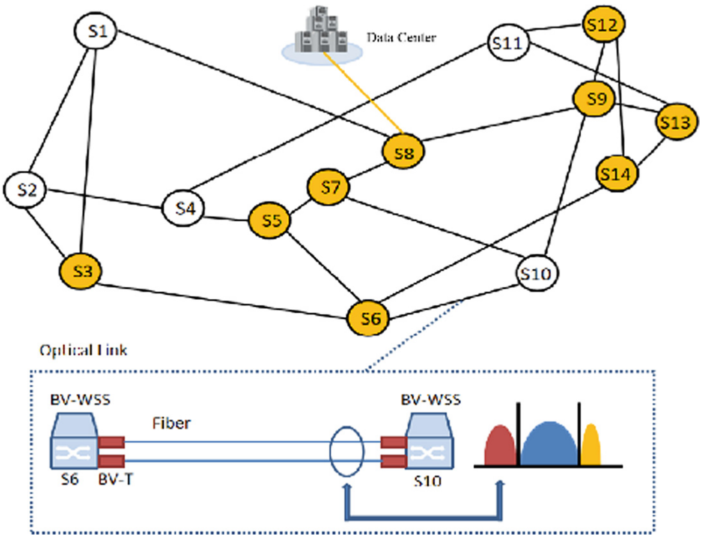

Fig. 4. Resilient optical data center inter-network model structure

4 Conclusion

This paper first introduces the basic concept of hose model, explains the background of network virtualization, and briefly introduces the four-layer structure model of Y.3011 optical network virtualization and the function of each layer, then introduces the network virtualization problem under the hose model and analyzes the general process of virtual network mapping under the hose model. Then the structure of the resilient optical data center inter-network is introduced, and thus the constraints that need to be taken in account when the underlying physical network is a virtualized mapping in the resilient optical data center inter-network are proposed to provide a theoretical basis for subsequent research.

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