A study on the Monitoring Model for Traffic Analysis and Application of Big Data

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Abstract. New services such as Smart media recently as an extension of the platform, big data, with an increase of the Internet traffic, according to new network services, such as LTE network QoS(Quality of Service) to be reflected in policies such as the well known Internet traffic analysis and forecasts for has become necessary. In this paper, foreign policy, monitoring and analyzing Internet traffic, to meet domestic conditions for monitoring the Internet traffic of big data structures with an emphasis on monitoring and measuring point for the model compared to the model proposed monitoring/analysis was. The proposed model of traffic monitoring participants(companies, institutions/corporations, general users) to the traffic condition and the government by providing analysis and forecasts, including traffic management and network upgrade to enhance the quality can be used to promote investment can.

Keywords: Big Data Traffic Analysis, Internet Traffic Monitoring, Network QoS, Traffic Monitoring Model

1 Introduction

Smart phones and other new services platform with an increase in traffic due to the expansion of new network services, such as LTE, based on the IP protocol is integrated into the trend for new services, such as the network QoS policies to reflect on a well known internet traffic analysis and prediction information was needed [1,2].

In the case of foreign government agencies or businesses, government, research organizations, and organizations the organization of periodic monitoring and results analysis and forecast report prepared for use in the policy, and domestic Internet traffic growth trends and analyzes presented by type of traffic, communication used as basic data for industrial development, or to take advantage of the user's information. In addition, the analysis of Internet traffic trends and status report from ITU announced the marketing advantage, and most of the trend in OECD countries by taking advantage of its own neutrality, institution or industry is underway [2].
If you understand the status of domestic internet traffic internet traffic monitor that can be periodic status and forecast report is required, and ISP -to-end service provider in case of a problem with neutrality requires data providers to resolve disputes. Thus, for network upgrade policy to reflect the amount of research, with the entire Internet traffic by service, by user, by analyzing the trend of increasing traffic management is required [1].

In this paper, in Chapter 2 of foreign policy for Internet traffic monitoring and technology , and Chapter 3 for monitoring the Internet traffic of big data structures with an emphasis on monitoring and measuring point for the model presented in Chapter 4, the monitoring model comparison/analysis, and finally, the conclusion was described in Chapter 5.

2 Related Research

2.1 Internet traffic monitoring and policy for the U.S

In the United States, private industry, and traffic monitoring and analysis is in progress under the leadership of research groups, and the government supports research and monitoring technology industries and private organizations to take advantage of the traffic monitoring and analysis [2].

Private industry and research institutions propulsion system led monitoring, analysis and prediction of the results and present management, and traffic monitoring and research organizations, such as the CAIDA SANDVINE, CISCO VNI report, including the carrier's network upgrade policy, telecommunications policy, and has used. Internet traffic monitoring of non-government ISP, equipment manufacturers, research organizations, and the voluntary activities of the council to act as supports.

2.2 Internet traffic monitoring and policy for the Norway

Norway is an open exchange of IP traffic and traffic analysis for the purpose of exchange point six IP NIX (Norwegian Internet exchange) to establish , to perform the monitoring of Internet traffic and has used the results of [2].

The system was established to promote government NIX exchange IP traffic through a network neutrality mandate to maintain monitoring on domestic and international traffic, and constantly in progress, NIX ensure objectivity in the management by the operators working group participants through research activities reflect the reality on the telecommunications service policies are focused on.

NIX specific business architecture is not accessing the Internet through a third party service providers, and service providers to exchange traffic between the IP to configure the environment, ISP, content providers, web hosting companies, wireless carriers, VoIP providers, and various types of portals operators of the exchange of IP traffic through NIX is mandatory.
2.3 Internet traffic monitoring and policy for the Japan

Ministry of Internal Affairs and Communications of Japan-led council's Internet Study Group, including monitoring Internet traffic, how to configure Research utilization and traffic statistics, and the data presented [2]. Propulsion system for monitoring the Internet traffic management and government, ISP providers, equipment manufacturers, such as university research center of the Research Institute(WIDE, etc.) over the status and forecast data for research and periodic reporting by the, user's ensuring information security and objectivity and the ITU standards organizations, including the International technology group has announced the information. WIDE MAWI Working Group of the way through the monitoring and analysis of research utilizing data traffic usage reports are reflected in the policy development of the domestic telecommunications industry and network upgrade has been utilized in the study.

3 Internet Traffic Analysis Models of Big Data

Big data model used for Internet traffic monitoring agency, assuming that the measurement points and hot spots in sub-hierarchy, depending on the location of the measurement points ISP-based model (model 1), the user-based model (model 2), and a mixed model (model 3) can be divided into. All models mobile users and network(IXP) for the same basic measurement points have in common.

3.1 ISP-based monitoring model (model 1)

ISP-based monitoring model as a home-based ISP, hotspots and corporate/ organization, all traffic from the ISP's subscriber access node is a model to measure.

![Fig. 1. Monitoring model 1](image-url)
3.3 User-based monitoring model (model 2)

User-based monitoring model of residential subscribers Home G/W is measured at the hotspot uplink hotspot G/W measured at the corporate/organization that is connected to the ISP G/W only to measure the traffic model.

![Monitoring model 2](image)

**Fig. 2.** Monitoring model 2

3.3 Mixed monitoring model (model 3)

Mixed monitoring model of home hotspot ISP's subscriber access nodes is measured in the companies/organizations that are connected to the ISP G/W only to measure the traffic model.

![Monitoring model 3](image)

**Fig. 3.** Monitoring model 3
4 Comparison/analysis of monitoring model

ISP-based monitoring agency a lot about the structure used to monitor the status of traffic distribution, and relative to the target enemy, but the consultation, ISP requires close collaboration with it is difficult to apply because the relative.

Using the structure-based monitoring agency to monitor the traffic distribution is relatively less use status through the cooperation of institutions should attract many participants, so it takes a considerable amount of time.

Therefore, ISP and mixed by participating agencies monitoring schemes reduce the burden on the ISP have to consult with the relatively small number of available organs, so it is preferable to monitor the traffic structure.

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<tr>
<th>Division</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
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<tr>
<td>Organization</td>
<td>Subscriber access node(ISP)</td>
<td>Available institutions G/W</td>
<td>Available institutions G/W</td>
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<tr>
<td>Enterprise</td>
<td>Subscriber access node(ISP)</td>
<td>Enterprise G/W</td>
<td>Subscriber access node(ISP) or Available institutions G/W</td>
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<td>Home</td>
<td>Subscriber access node(ISP)</td>
<td>Subscriber home G/W</td>
<td>Subscriber access node(ISP)</td>
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<td>Hotspot</td>
<td>Access network(ISP)</td>
<td>Hotspot G/W</td>
<td>Access network(ISP)</td>
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<td>Mobile</td>
<td>Backbone carrier</td>
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<td>Network</td>
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<td>Size</td>
<td>Large</td>
<td>Small</td>
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<td>Targeted consultation</td>
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5 Conclusion

The proposed model of traffic monitoring participants (companies, institutions/corporations, general users) to analyze and predict traffic condition data to the government by providing a network upgrade, including traffic management and for improving the quality can be used to promote investment.

In terms of the government’s first domestic traffic status information and traffic analysis, predictive analysis and quality of information in conjunction with the
analysis of the data by utilizing the information for network upgrade and degradation established based on a policy of actively respond will be able to tap into.

In terms of operators derived from the predicted traffic increase traffic to accommodate the efficient way to predict in advance, so that you can take the data can be provided. Operators use the media-specific characteristics such as the user's traffic forecasts provide detailed traffic condition, and if the increase in traffic on the way to upgrading the network can come up with. In addition to the increased traffic in advance to prepare the way for the bypass can be derived.

By identifying the status of institutions in terms of service on the existing communication lines and communications equipment is being used for the distribution of traffic-related issues can be identified in advance. About traffic issues and problems such as active traffic management can establish a plan. Also, in addition to traffic-related problem solving immediate future, increased speed of the Internet connection can be prepared by identifying the time. And to prepare for future traffic growth by agencies of communication can be used for strategic planning.

In terms of user status and quality of service level, and national Internet service, based on the state of higher awareness and an active Internet use will be able to express myself.

References