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Increasing the Quality of Broadband, Voice Calls and TV using Smartpipes

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Abstract: Technology is not much good if it is not simple and powerful. In the same way even though the technology of broadband, voice calls and TV are playing a vital role in our daily lives it comprises of several disadvantages, some of them to represent are less bandwidth due to increase in growth of video streaming like high definition, mobile phone Internet and other services. Bad user experience due to the value of services occurred by traffic control. Uncoordinated networking results in lack of correlation between the network and its applications. Inflexible resource allocation leads to idling or wastage of resources. To overcome all these problems, we use a technique called Smartpipes. Smartpipe is defined as a neat fiber solution used for a good high speed broadband internet, neat crystal-clear voice and latest up-to-date TV content through a centralized access. By using Smartpipes, we can achieve a faster connection speed and high-definition broadcasts and all the services are optimized within the same fiber pipe for consistency in performance at all times.

Keywords: Smartpipes, Broadband, Voice calls, TV.

I. INTRODUCTION

In telecommunication, we know there are various issues and one among them is call drop which is common in present scenario, due to which ongoing calls gets disconnected before the conversation has been completed, this might occur during the hands over of network from one mobile station to another,

Whereas Smartpipes has no call dropping it maintains consistency throughout the process.

In broadband, the speed we receive depends partly on how many people are using the network.

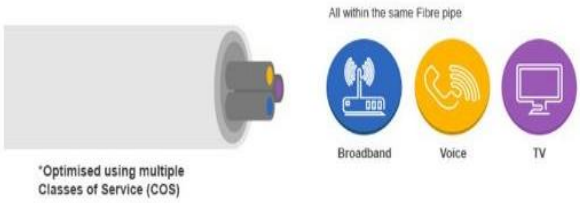
Sometimes we can notice speeds reduce especially when there is more usage occurring simultaneously, whereas Smartpipes has no laggy internet, no slow downloads because each and every service is prioritized.

In TVs, the streaming may not be clear and channels may not be displayed several times due to technical reasons.

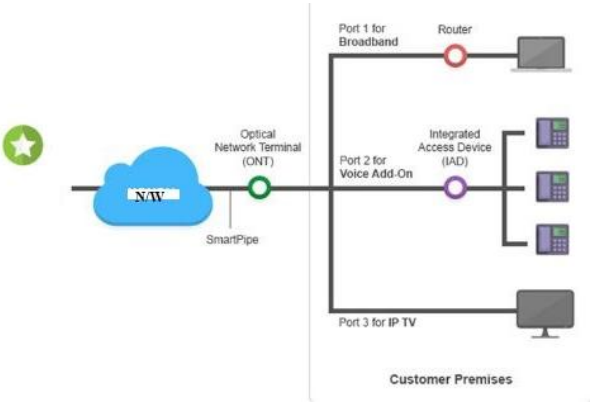
Also sometimes the audio part or video part will be having disruptions with some breaks, struck and no signals, whereas Smartpipes give out a smooth streaming of channels and provide an up-to-date content.

II. DESIGN & DIAGRAM

How does a Smartpipe look like?



Overview diagram of Smartpipe:



III. CONCEPT

Smart pipe – One converged, no-fuss fiber connection for entire Internet (broadband), phone (voice calls) and TV lines as shown in Fig1

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Fig 1- Broadband-Phone (Voice Calls)-TV

There are few concepts like bundled service which we are aware of. But multiple services in one connection have a problem leading to traffic jams. [2] Generally when there is traffic on roads people implement highways to avoid suffering from logjams as shown in Fig 2.

Fig 2- Suffering from logjams

But that is where smartpipes are different. Smartpipe optimizes bandwidth among all your services, giving each service a dedicated lane at all times. The service will travel neatly in a consistent manner as shown in Fig 3. And unlike conventional bundled services it's highly intelligent where each and every service is prioritized, for uncompromising quality as shown in Fig 4.

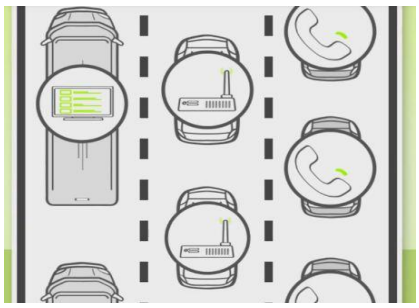

Fig 3- How the services traverse

Fig 4- How services are prioritized

It is highly intelligent because when there are more services running in one lane and there are very less services running in other lanes then it can intelligently shift to the free lane without any disruptions. [2] This helps in useful allocation of resources. This leads to a good quality with less clutter and no bad traffic. Also no worrying about slow downloads, no laggy internet or an important business call drop, no missing out up-to-date information in TV. One smart highway that gives you the best out of each service is high speed broadband internet, an extensive selection of TV content and crystal-clear phone lines with unlimited free local calls and advanced call management features. It is highly flexible in nature. It can easily scale the broadband with a reasonable speed and TV with several boxes. And also connect phone lines to several numbers of devices. It can also support for analogue phones. And Finally One centralized access for all the fixed and mobile phones with free number retention which is efficient. They are completely integrated services. It also enables minimal disruption in our daily lives.

IV. FUNCTIONALITY

The traditional way of communication would be a dedicated line for broadband and dedicated line for voice calls, whereas using smartpipes all the lines (may be for broadband, voice calls or TV) would be encapsulated in a single channel i.e. There will be no dedicated line for either voice, broadband or TV. Therefore, if one line is free and one line is busy then the data present in busy line can shift to free line. For more brief understanding consider, if the voice call line is free and data line traffic is high then data line traffic can use the voice call line for transmission of data. More traffic increases, facilitated by mobile broadband, impose new challenges for the pipe model. Management has the issues for operators, as is the question of how to turn dumb pipes into smart ones. For making the pipes to be smarter, then the network must take care of the service development needs. The rapid growth of high-definition video streaming, mobile phone Internet, and other services may drive the expansion of network pipes which requires increased bandwidth, in and of it, does not increase pipe value. They are hugely uncoordinated, resulting in a lack of correlation between the network and its applications. [7] Henceforth, Smart pipes implement the capabilities of networks existing, enabling collaboration and provide support between the networks and services and in turn enhancing the value of networks through subscriber identification, service differentiation, network management systems, and traffic control. Smartpipe helps in more efficient optimized services and consistent performances. Also smartpipes can be very reliable, highly flexible and efficient in nature. Multiple services in a single connection have a problem which may lead to deadlocks. Smartpipe optimizes bandwidth for all the services by giving each service a dedicated line at all times. Also it acts intelligent by

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prioritizing each and every service for uncompromising quality i.e. dedicated intelligent prioritized. Therefore eliminates issues like traffic, clutters, slow downloads, call dropping, and lagging internet.

Smartpipe creates a real time, global and privacy protection and secures the data ecosystem linking network operators to the data platforms by providing the highest quality data profiles. This helps in quality of data intelligence on a global scale. This concept of intelligence helps in various features like Verification, Authentication, and Identification.[3] The intelligent identification system helps in making an easy way for data hungry businesses to access enriched profile attributes. Smartpipe is built around the legally proven identity for checking whether the user is valid or not and authenticates whether users information is correct who they say they are and check how they behaves and what attributes they consists of. High quality information of customer on a global scale through a platform, the network operator information is available widely on a global scale. The power of network operator data is unlocked in present data-driven world; the organizations depend on accurate and up-to-date profiles to deliver relevant services. Network operators are in a very unique position resulting of the intelligence gathered networks. Network operators hold one of the enriched sources of raw data by linking this data to a valid, anonymous identity, it becomes rich and powerful. Smartpipe maximizes the value of data. The network operators are enabled by Smartpipe ecosystem to maximize the value of their data assets across a global range of use cases and data platforms in a secure manner, it ensures the data privacy and permissions are protected at all times.

Smartpipe provides great privacy. It believes that people should own the data and control their own data; where local regulations are still to be updated. In global brands, network operators are well placed to earn good consent for responsible value-creating the use of their data. Smartpipe secures the data in the network. The unique technology of smartpipe ensures that raw data always remains within the network operator's secure network environment and is never shared to the cloud or shared with any third parties. Therefore there is no need to worry about any data security as it is fully protected and no knowledge is shared to others. For any data to be shared there must have a prior confirmation from specific user. Unless the confirmation is given no single piece of data is moved out.

In traditional systems, the data transmission will happen in a single channel so it might prone to information security therefore privacy comes into picture whereas in smartpipes it will process the data fields for which privacy permission has been granted to the network operator or the data platforms. The possibility is nil for data platforms to derive the details or data profiles when the data is accessed through smartpipe technology which is protective in nature. Smartpipe involves content management which will also include filtering the Uniform Resource Locator according to the user's recent searches and the advertisement can be personalized. All these services which would result on the end users experience due to the inconsistency with dumb pipe.[4] In Smartpipes, the traffic prioritization to a website might be a fast lane or a slow lane will not have a dumb pipe for content purpose. And if Internet Service Provider moves in an openly speculated direction then it might result in collaboration between content management and network management. The bandwidth shouldn't be degraded on certain applications which would have effects on the content, i.e. we cannot have smartpipe for applications and dumb pipe for content. We will not have the ability to distinguish between the application and the content where the internet service provider will not censor the conversation which is in progress which will effect on the content of the communication.

The data transmitter for network operator is Smartpipe. The information which is received from the users will enhance the lookout of drastically growth in applicable mobile advertising campaigns.

Smartpipe technology is the Network Operator data product that places data security and privacy. As mobile usage is increasing it targets on market for advertisement which can be achieved by integrating an approach to the operator data delivery with unique technology. [9]

It is a platform for network operators to monitor the privacy compliant customer data safely and securely while maintaining total control over data. Network operator data will provide the similar and appropriate communication from the global brands, they tap into our interests to add a value to our daily lives, while still being respectful of privacy concerns. Smartpipes in the network solution sits safely behind firewalls operator, data extraction from the operator databases and facilitates the delivery of anonymous information in a secure manner to the advertising ecosystem. This result in accuracy, effective and planned approach to budget spends. Smartpipe is an integrated solution designed for next generation packet core networks.

Features

- Comparatively faster installation than other common piping
- No specialized trades needed
- No threading or pipe brazing and welding
- Special tools not required
- It is very simple to mount & connecting hardware
- Possible to connect with existing systems using different pipe types
- Easy to add or disassemble for your changing requirements

Smartpipe Solution – To sustain business growth in line with the Internet growth, smart pipe solution can help operators build an open, mobile Internet eco-environment.

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The smartpipe solution consists of three sub-solutions:

1. ERO-Effective Routing and Offload Solution
EROs focuses on building a low-cost pipe without any change or alteration to the existing network. ERO helps reduce network construction investment caused by fast growth in mobile Internet data traffic. It enhances the bandwidth access for improving the user experience.

2. OOM-Optimized Operation and Management Solution
OOMs focus on building a visible pipe and a manageable pipe through an accurate inspection of user behavior and distribution of traffic and a flexible policy mechanism, OOMs helps operators deliver various services. Through integrated analysis comprising of statistics and deep data mining, it helps operators enhance their service innovation capability.

3. COIN-Content Optimization Intelligent Network Solution.
COIN provides a content optimization and content processing. Through storage of service contents, acceleration of service contents, compression of service contents, adaptation and aggregation of service contents, it can effectively improve user experience and help the operators to get good revenue from the Internet. It allows open service access, efficient content distribution, more content storage, and shared adaptation of services. It increases the access speed to self-operated services and mobile phone Internet applications, Enhances user service experience, and saves cost of storage and management. There are three sub solutions that can be merged or partitioned as required. Provides a basis for next-generation core networks of packets, helps operators shift their operation mode to accommodate mobile Internet and take lead in future mobile phone internet development.

A national broadband network smart pipe solution helps the flow allowing operators to manage broadband networks efficiently, reduce costs, increase profits and improve services for customers.[5] Network capacity can minimize or split the growth of traffic to reduce the network pressure. The smartpipe solution meets the needs of customer and provides various differentiated services. In addition, it also meets the operation requirements regarding the traffic for different phases of national broadband development through the deployment of smartpipe and uses a four-dimension traffic strategy. This aspect features increase in the traffic scale, activation of traffic value, decreases costs and mines of traffic content.
Smart-pipe is a service for providing an integrated and accurate solution to the end users, Instead of communicating in dumb pipes. The service uses service platforms and management of devices that are given by the pipe operator. Requirement of a communication protocol between the smart device and platform will help in convey management information. Services that leverage or balance integrated services from the operators are in this category. [1]
Smart pipes provides the advanced services of IP such as secure intranets and extranets and also an interactive communication services that the business customers can manage from anywhere on the internet that is not specific to a single location, through a web based graphical user interface. Smartpipes supplies an easy way to manage global IP services that normally would require 20-40 network engineers. It is a building tool kit for addition of network support and decisions and supporting network devices, and will continue to grow by adding still more services. It offers the opportunity to leverage your skills to solve a business problem. Smart pipes is a VPN (Virtual Private Network) intranet and extranet service that allow the customers to provide types of networks from one location to another i.e. either their office location to and from their partners office location. Smartpipe service acts as a part of an effort to implement VPN technology available as a service for its customers. It also focuses on providing software service infrastructure over the internet. There are plenty of physical network deployment, and improvements that will add more capacity and capability down at the physical network.

Needs of operator, a smart pipe must conform to the 4Cs of diamond quality:

1. Carat weight
It provides very high bandwidth efficiency, flexibility of bandwidth expansion, and meets the challenge of bandwidth explosion in the mobile Internet era.

2. Clarity
Clean, neat and visible communication pipes give providers in-depth into services and user behaviors. They are basis for making operational decisions for clean pipes with functionality of antivirus protecting the user security.

3. Color
Very fast, colorful, great access experience is provided to end users, and consulting services are been provided to users.

4. Cut
Low-value traffic is removed out to ensure the quality and accurate service for high traffic. Smart pipes are built to create maximum value or a greater value.[8]

Advantages
- Reasonable material costs
- Available in multiple sizes
- Rust protection
- Smooth interior
- Lightweight
- Easy to install
- Lesser cost of ownership

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Disadvantage

- Labor intensive installation
- Often only exterior is coated
- Requires good quality materials
- Susceptible to thermal cycling
- Installation requires open flame
- Safety
- In certain areas, code is not compliant
- Limited pressure ratings
- Susceptible to UV light and some compressor lubricants
- Becomes brittle

V. CONCLUSION

There's a lot in technology by keeping things connected. Consider Broadband, Voice and TV are three services with three providers – three points of failure and when things go wrong, three times the headache. On the other hand, take a good look at your smart phone. Everything will be in one place, with just one connection. Ever wondered – why can't our daily lives be like that? So, to overcome we use Smartpipes by introducing the first unified and complete business fiber solution to overcome the problems. Smart pipe – One converged, no-fuss fiber connection for all your Internet, phone and TV lines. Smartpipe optimizes bandwidth among all your services, No worrying about slow downloads, or an important business call dropping, or streaming the latest news updater.

The main goal of smart pipe is not to control a service but to enhance user experience. A pipe can be made "smarter" by using and scheduling wireless frequency, fiber deployment, and user data. Moreover, the network convergence, unify users identity and cloudiness of pipe are three important ways to achieve smart pipe.

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