Transformation of the existing operator to the service provider for business customers

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Abstract – **In this paper we describe all the benefits of implementing managed solution, while as an extension of this solution for connecting a large number of locations with a central location through the L3VPN, is presented an innovative solution with virtualized central location placed in the operator's Data Center, in order to achieve additional performance and security improvements.**

Keywords – ***Managed Services, Customer, Connection***

I. INTRODUCTION

The development of modern information and communication technology represents a major challenge for the operator nowdays, because modern operator must have additional services in their portfolio, beside the basic service for connecting to the Internet, and to be prepare to offer customer complite solution for their business. An increasing number of companies that are highly specialized, like foreign representative offices and large retail chains have specific requirements concerning networking and connecting with their central location and pulling data from a central server, as well as in terms of Internet access which must comply with certain rules and restrictions. In order to meet the company's requirements regarding telecommunications, the company must have highly specialized person and sometimes the whole team that deals with the establishment of services, monitoring and solving any problems. Because branches are often geographically dislocated throughout Serbia, and sometimes abroad, customers increasingly need to shift the responsibility for telecommunications to the service provider - operator.

In order to deal with managed solutions and provide customer services in addition to Internet connectivity, a complete solution, the operator must pass every year a serious revision of the allocated managed certificates. Once awarded the certificate gives the operator the ability to deal with managed solutions with certified processes and professional team that provides support for all processes. However thus obtained certificate is valid for only a year, and each year the committee re-checked all available resources, processes and evaluates. This process monitor all systems for tracking services, application failure, the way and the speed of solving interruption. The technical teams supporting all of these steps in the implementation and utilization of services are certified

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and continuously expands with professionals, due to the more specific and more extensive customer requirements.

II. MANAGED SOLUTIONS FOR BUSINESS

A. The effectiveness of managed solutions

In some cases business solutions for connectivity have to be predefined so the users who do not have a lot of experience in the IT field could easier identify more suitable solution for their business, and this it also simplifies monitoring and analyzing the processes quality. All solutions with their alternatives offer the possibility to the client to create his own solution that is most appropriate for his business or operator's presales team could do this for him according to the requirements (tailor made solutions).

The leading operator in the field of Managed Solutions has a platform that is designed to provide innovative and high quality ICT services and solutions for business customers. The entire service portfolio is based on a regional multi-service network supported its own optical infrastructure, modern telecommunications equipment and modern data centers. The primary mission for the operator is to provide a comprehensive portfolio of services to all business customers regardless of the type of activity or size of company. Beside all of this, it should take into account the specific requirements of individual companies and to provide flexible services and customized business solutions.

In order to achieve superior performance and continuous operation service, the operator provides fiber optic infrastructure in his network for the customers. These services are designed for organizations that need a reliable, highly available and fast Internet service. Due to the increasing needs of large companies for symmetric internet access download and upload speeds in this type of services are identical. An important feature is the SLA (Service Level Agreement), which guarantee the required level of service availability. The optical infrastructure provides the ability to add other services that the operator has in its services portfolio easily by VLAN separation. Equipment configuration and activation of the service need to be provided by a team of experts on the operator side, on the equipment collocated at the customer premises.

The main advantages created solutions must be defined and represented to the customer. Clearly must be introduced cost savings and improvements in quality of service and all advantages for the customer. The basic advantages of managed solutions are:

1. Savings in procurement and replacement of equipment, because operator implement the needed equipment and replace it when there is a need for that

2. Providing service availability and performance quality by monitoring the SLA and QoS (Quality of Services) parameters

3. The specific technical support (NOC - Network Operations Center). The engineers in the NOC perform proactive monitoring managed CPE equipment 24/7/365 in case they notice any inconsistent behavior they proactively open a trouble ticket and notify the customer at the same time they troubleshooting to solve the problem in the shortest possible time and to raise the performance of the service to the appropriate level

4. Customer has available portal for monitoring QoS (quality of service) parameters

5. By choosing managed solutions company receives a customized solution that is integrated with existing equipment, which means that is compatible with the existing infrastructure and can easily be upgraded to it

6. Pay as grow model, means that the costs of creating and maintaining solutions increase proportionally to the growth of client needs

7. Reducing the cost of procurement of infrastructure (Capex) to migrate to the new technology, reduce maintenance costs

8. Users focus on the core business. So, what's the objective of the managed solutions created this way is that the client relieve worries about the Internet and focuses on the development and improvement of their own businesses

As a leading regional provider of information - communication technologies (ICT), the operator offers business customers complete IT solutions and systems for unified communications. An integral part of the offer is technical support 24/7/365 that is making the integration, installation, commissioning and maintenance of equipment and applications from the company's overall portfolio. Operator bases its services on the products and solutions of the world's largest manufacturers of ICT and developing their own solutions, relying on strong local teams, regional cooperation and individual approach to each customer.

B. Customer Care 24/7/365

Operator has specialized teams of people who provide support to clients, as well as the NOC (network operations center) that is available 24/7/365 and proactively monitor all links and managed services equipment, for all customers to have adequate support for their services. Proactive monitoring is designed to track the logs in which the central router in a very short intervals of time (a few seconds) sends a ping to all managed routers (CPE) and waits for a response from them. If it happens that some of the routers (which are located on the sites the user) does not return the ping in the time frame that is strictly defined, fire alarm logs become red and engineer immediately begins the troubleshooting link to eliminating possible malfunction. Automatically opens trouble ticket and notifies the user about it. Furthermore, the system continues to count the time it takes to solve the problem and that the trouble ticket is closed. If it is determined that there was a deviation from the guaranteed QoS parameters, the operator is required to pay penalties to the customer.

The biggest advantage of managed service is that sometimes an interruption or other problem is recognized and resolved (trouble ticket opened and closed after solving the problem) and a customer receives a notification that the problem existed and that it was resolved, but he do not has any interruption because it did not occur during working hours. This technique significantly shorten interruptions and the time required to solve the problem, because it is performed early detection of problems and immediately NOC is seeking a solution for the problem occurred. The traditional way of functioning technical support means to wait for information about login failure or interference by the customer and only after complaints from the customer moves in troubleshooting and opens trouble ticket.

C. Further development

IT budgets are increasingly limited, some of them reduced, and the IT department is required to meet the needs of companies that are more specific. Whether it is a small or medium size company or a large company, cloud services are imposed as a logical step forward.

Cloud services include the rental of IT and communications infrastructure and services of specialized IT house, without making capital investments in their own infrastructure, software and human resources, which is becoming more profitable and more common business model of companies and organizations around the world. They are ideal for companies that have a need for effective implementation of new IT services that will help them to improve business processes, communication with customers and stakeholders and to operate effectively. Services are flexible in terms of volume, are formed towards the real needs, and services are charged according to the scope of use.

Managed services provided by the leading operator can be grouped as follows:

1. Managed Connectivity (Internet connection with managed CPE where the operator at the request of the client changes and adjusts configuration)

2. Managed L3VPN (connecting remote locations with the managed equipment)

3. Managed Voice (Centrex service)

4. Managed Cloud (MS Exchange, SharePoint, SQL Server, ERP)

The advantages of using this services can be summarized as:

1. Reduction of costs

2. Flexible scope of services in accordance with user needs

3. Quickly and cost-effectively launch new services

4. Capacity Expandability

5. Predictability of performance and costs

6. Using the modern equipment

7. The quality and reliability of service with guaranteed SLA

8. Fast troubleshooting with technical support – NOC

9. The possibility of rapid and adequate response in case of changes in the internal / external environment

10. The savings in the area of administration, maintenance and human resources

Advantages and savings achieved through the implementation of a managed services are both short-term (reflected in the initial investment) and long term (lower monthly subscription fee in respect of costs before the introduction of managed services). The tendency of savings in terms of telecommunications and the growing demands in terms of quality leads to the development of innovative model for connecting the large number of locations through a Managed L3VPN with a central location. This involves setting up the Internet connection at the central location (usually the locations with the highest number of employees) and create virtual connections - tunnel (L3VPN) through the operator's network to all the other branches. In this way it is achieved that IT administrator at the central location can easily and securely access data stored on remote locations and vice versa. The administrator who usually sits on the central (main location) has on line access to all locations. Administrator can by simply logging check the status of each location and whether it is active or not. It can also access data at a remote location and perform various settings. If there is a problem with the availability of some sites (some of the locations is offline) may contact the duty NOC operators and engineers to solve the new situation. Since the NOC has remote access to the central (managed) router at each location, they could remotely check all the settings and fix the problem bringing the location to on line status. If the problem can't be solved remotely, duty team is immediately sent into the field to replace the device. By providing such a service with the managed routers, as well as the duty to support and the emergency teams everywhere on the field, we have a situation that administrator from a central location can monitor and maintain the operation of all sites, distributed throughout Serbia, with the assistance of an operator.

D. An innovative managed solution for connecting remote locations through L3VPN with virtualized central location in the operator's Data Center

The specific requirements that is set was an absolute availability of central location for access by the branches to achieve sensitive and constantly necessary information and to be constantly updated so they could have business continuity and earn their income. The specific client is a chain of retail stores with branches distributed throughout Serbia. At the central location the server through a special application keeps track of the state of the warehouses, current prices and updated information as soon as changes occur because the current and accurate information are necessary at each retail location and at any time. Given the fact that this is a store it is a logical conclusion that every minute unavailability of data involves great financial losses because store is not able to deliver the goods, and buyers in this case, go to the first next stores and thus firm losses its income. So, in order to achieve absolute availability central location managed connectivity has emerged as a logical solution. However, although this type of approach guarantees a high level of availability and proactively monitors the link, the request is still on the availability of 100% and it is reasonably possible only with one or more back-up links. With regard to the possibility of

introducing more optical links by different operators (for redundancy) unjustifiably expensive investment, a proposal by the expert presales team is to take a central server applications with all its data and relocate at the operator's Data Center and to ensure Managed Services. This solution achieves absolute uptime and all the necessary data that is on it. All locations, including the main access to the server and this is provided through a L3VPN tunnel. High availability of the central location makes all the data available for the smooth operation of all stores.

In the standard option of placing the equipment in the Data Center, only the business user (or an authorized person from the company) has access to the equipment both physical and remote. Operator physically protects the equipment and provides redundant power supply, protecting against flooding and fire, with modern systems of protection, and connects to the Internet through triple redundant links, maintain an adequate temperature in the room needed to operate the device. What is also important, there is a team of people who physically protects the equipment at the site from unauthorized access. All of these benefits are exactly client's needs on its central location. Since in this case is the central location relocated to the operator's Data Center customer actually realizes all the benefits of placing equipment in the Data Center plus an additional option of getting managed services which means that the operator takes over the servicing of the monitoring and care of the link to the main server. These solution has achieved maximum performance of the master server which was the request.
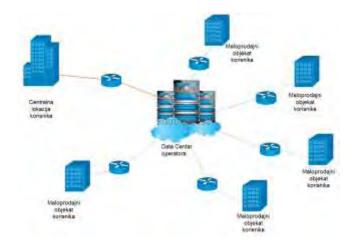

Fig. 1. Managed L3VPN Solution with central location in the operator's Data Centar

In order to meet the client's needs in the best possible way, the provider is making a real innovative managed service solutions and implemented in an unusual manner (Fig. 1). In the data center is placed adequate router with all the necessary data. This establishes a managed connection through L3VPN from a central location to all remote locations (stores) which also have the managed equipment that was configured and monitored by the operator's expert team. Routers communicate over L3VPN tunnel that is established between the central site and all remote locations.

Also, in addition to all the connections a special tunnel to the central location was made in order to update all the data in a timely manner. Through this tunnel IT manager can access software and data stored in the data center (cloud managed solution) as well as other locations in the L3VPN MPLS network.

Thus configured solution ensures maximum performance for business users and absolute availability of servers in the Data Center, with the data being replicated to a central location, for extra protection. Also, it offers various advantages for IT administrators. Automation services (services managed by a professional team of operators) significantly simplifies the work of IT administrators and allows him to devote additional time improving business applications and to introduce a new systems in order to improve sales and facilitate the work for his employees.

III. CONCLUSION

Relocation of the central location in the operator's Data Center provide the maximum possible availability of the central location and because it is located in modernly equipped Data Center, maximally protection. It also established a special connection from the actual location of the customer to the virtual central location in the operator's Data Center. The cost of such a solution are far lower than that the client has chosen to make himself redundant connections such as Data Centre at his premises, which would mean higher monthly costs and more engaged workforce. In addition to the initial very large costs of building such facilities, it would also be necessary to hire additional human resources to control the operation and the accuracy of the facilities and equipment in it 24/7/365.

In order to maintain its leading position in the market, management believes that in addition to providing pure services, should be going toward the goal of providing a complete solution for each user separately. Taking into account the specificity of each client's business in the global market, many professional teams are engaged to make the best technical solution for each customer individually. The complete solution includes linking all locations and providing the entire spectrum of telecommunications services and Internet telephony service L3VPN and end cloud services and TELEHOUSING.

It was concluded that these solutions require each client and its implementation described in this paper is a contribution to a specific company and further development of this field. Operator has become a provider of complete solutions and partner that supports the client in its development of the market and thus ensures its position in the market.

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For this paper were used information and facts derived from a specific case that was taken into consideration. The solution described in this paper exist as such and functions and also delivers significant savings to the client that uses it.

Comparison of costs before the introduction and after the introduction of managed solution with virtualized central location are the subject of further research.

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