Critical
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Delivering Profitable Broadband Managed network Services for the High-Growth SME Market:
The Business Case
For Telcos and ISPs

This white paper addresses a growing market opportunity for Telcos and ISPs to deliver value-added managed services to their business broadband customers, increasing per subscriber revenues and avoiding customer churn.

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When deployed at the edge of a customer's network, they enable Service Providers to remotely provision, support and maintains voice and data services such as an IP-PBX and VoIP gateway, security, QoS, collaboration, WiFi, router and file storage.
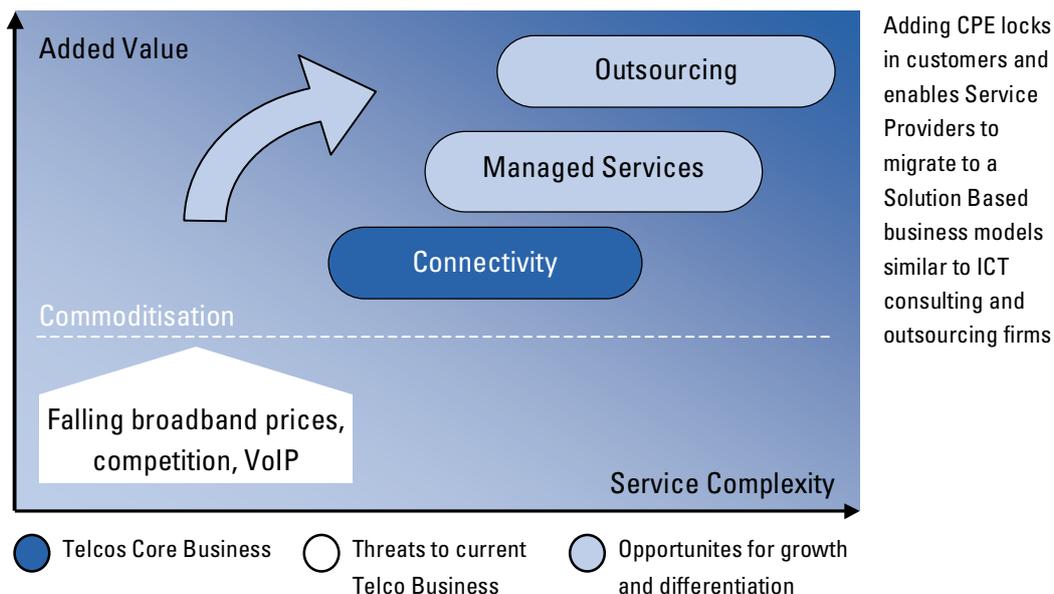
WHITEPAPER

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1-Introduction

Telcos and ISPs have traditionally derived the majority of their revenue from providing connectivity, and charging for bandwidth and time spent using their networks. These revenue streams are threatened by technology trends and market evolution, with factors such has the commoditization of bandwidth and the disruptive nature of VoIP among the most preeminent agents in radically transforming the telecommunications services market.

Acknowledging this market reality, Telcos and ISP's are currently looking for business models that can provide new sources of sustainable revenues. To guarantee future earnings, telecommunications services suppliers must expand portfolios to include the provision of value added services that can be used to achieve differentiation from other players in the market.

This white paper addresses a growing market opportunity for Telcos and ISPs to deliver value-added managed services to their business broadband customers, increasing per subscriber revenues and avoiding customer churn.

The latest "all in one" intelligent networking devices should allow SMEs and remote branch offices to benefit from the latest converged networking technologies without the need for specialist in-house IT knowledge.

When deployed at the edge of a customer's network, they enable Service Providers to remotely provision, support and maintains voice and data services such as an IP-PBX and VoIP gateway, security, QoS, collaboration, WiFi, router and file storage.

Adding CPE locks in customers and enables Service Providers to migrate to a Solution Based business models similar to ICT consulting and outsourcing firms

2-A new market opportunity created by the advent of low cost broadband internet access

In the global economy, SMEs need to take advantage of the latest ICT trends. But, unlike larger enterprises, they don't have the budgets or in-house technical skills to do so. With SMEs making up over half the GDP of countries such as the UK, US and Portugal this is a huge market that is often overlooked by Systems Integrators and Service Providers.

This happens because sustainable business models are not easy to develop, as smaller revenues per customer must make up for relatively complex and delicate service delivery models.

On the other hand, Telcos and ISPs already have a well established SME customer base to sell to among their existing business broadband subscribers. To retain these customers in an increasingly competitive market, while providing the services they want, without heavy investment in new technologies or costly reorganizations, is the Service Providers challenge.

Enterprises' branch offices have similar problems to SMEs in that, although they may have access to funding and skilled resources provided by head office, their remote nature requires ICT services and infrastructure that must be simple to deploy and maintain. While there are some differences in practice between the branch office and the SME scenario, for the sake of simplification, branch offices will be included under the SME scenario category throughout this document.

3-Delivering converged network services
to valuable SME customers

In the current business environment, service providers can see a new market opportunity created by the advent of low cost broadband internet access that:

1 Generates demand for sophisticated, integrated, low-cost, and easy-to use network services from SMEs which lack IT expertise and;

2 Enables Telecom Service Providers to effectively offer value-added services in order to differentiate from competitors, increase per-subscriber revenue, and move away from the increasingly commoditized bandwidth business.

Value added services can either be based on providing new features such as IP telephony (VoIP and IP-PBX); or complex IT services such as collaborative solutions; improved security; reliable storage; WiFi network support; or enhanced network and management services.

The growing complexity and sophistication of services is an obstacle for operators wanting to provide them effectively from a central host. Over time, service providers have come to the conclusion that the best approach is a hybrid one and lies in having a bundle of services provided from the network centre (via hosting) and from the customer's network edge through dedicated CPE (Customer Premises Equipment).

Alas, the cost of developing, deploying and maintaining the infrastructure for various function-specific CPE, makes this an expensive proposition with a questionable return on investment and wafer-thin margins.

On the other hand, to provide a dedicated, highly-integrated CPE that contains all the services a customer needs, and enables service providers to segment and customize the offering to meet their customer's exact requirements, would greatly increase margins and allow services to be gradually introduced, or bundled with bandwidth provision.

This is the challenge that can be met by a solution such as a multifunction Business Gateway that is simple and inexpensive to deploy and maintain at a customer's site, yet is comprehensive enough to provide a wealth of services that can be used to generate new revenue streams.

4-Supporting managed services on the network edge

The multifunction Business Gateway can represent a flexible, modular, and standards-based platform for delivering Managed Services to SMEs. It can be used to deliver new, sophisticated, value-added services on the network edge, while complementing services provided from the network centre.
A multifunction Business Gateway can specifically include unique features that enable Service Providers to deliver Managed Services in an efficient and cost-effective manner:

Controllability: The ability to remotely control all aspects of the device and its users is a key requirement, for example activating and terminating services, monitoring usage, defining different Quality of Services levels for different services and providing full AAA (authorization, authentication and accounting).

Accountability: The ability to support and account for complex business models based on time, traffic, or a combination of both.

Reliability: The ability to protect the customer's data through automatic backups and the ability to failover, in more demanding scenarios,

Flexibility: The ability to easily change configurations, introduce new services and change business models over time.

Hardware: The use of commodity hardware platforms from major brands allows rapid incorporation and support of new hardware technologies as they become mainstream. This enables services providers to capitalise on the latest technology trends without needing to invest in deploying new CPE.

Maintainability: The ability to support and upgrade the service over time, providing for bug corrections, security fixes, software upgrades, while delivering simplified hardware maintenance by using branded servers as the hardware platform.

Manageability: The ability to manage large deployments with potentially tens of thousands of CPE in an efficient and cost-effective manner.

The Service Provider can deploy a large set of value-added services today, while retaining the capability to deliver tomorrow's applications and services using the very same platform. This flexibility mitigates the risk of ending up with a stack of different appliances or CPE at customer's premises with all the negative implications in terms of cost, manageability, interoperability, and reliability.

5-"Must have" technologies for bundled offerings from Service Providers

Among the services that can be provided by a multifunction Business Gateway are several hot topics which have been identified by market surveys as "must have" technologies that SMEs are seeking to acquire as bundled offerings from Service Providers:

Threat management - an enterprise grade firewall, anti-virus and anti-spam functions, ability to setup VPN's between offices and with remote workers, and managing fine-grained Network Access Control (NAC) policies

Phone System - a fully featured IP-PBX and VoIP Gateway supporting "survival mode" operation through connections to ISDN and analogue phone lines and peripherals. It includes full QoS and bandwidth management, ensuring the quality of voice traffic.

Collaboration Server - an email and messaging server that allows for mail relaying and a controlled instant messaging environment. a web server for hosting of company websites and intranets, and also a repository for file sharing and printer server .

Network Management Server - It can be used as a Windows primary domain controller, facilitating desktop integration, or it can integrate with existing user management servers to provide user authentication, authorization and accounting. It manages all customer LAN and WAN services, including DHCP, NAT and DNS.

Internet Gateway - a router supporting ADSL, 3G, or Ethernet for connecting to broadband services along with web caching and content filtering.

Wireless Access Controller - supporting "in-the-box" integrated AP's 802.11b/g with WEP, WPA, and 802.1x authentication as well as external AP's

Additionally, a multifunction Business Gateway should provide a flexible but controlled environment for the Service Provider to deploy other value-added services in the future, such as delivery of targeted advertising or video conferencing.

6-Replace "technology" sales by SLA-supported business benefits sales

ISPs and Telcos are wary of introducing complex CPE due to the burden of on-site and off-site support it places on service providers. A multifunction Business Gateway must be developed with these issues in mind, aiming at zero "truck-roll".

Selling complex CPE to end customers can be a challenge for sales reps that are used to dealing just with bandwidth. Selling a service which is managed from end-to-end is easier than selling the technology. An offering based on an "install-and-forget CPE" integrated with a full remote management platform, empowers the sales force. In short, selling technology, which is difficult and requires skilled sales personnel, is replaced by selling business benefits supported by SLAs.

Analysts from In-Stat/MDR estimate that the new converged "business gateway" market will grow from $1.5m in 2005 to $2.1bn in 2010. This is being driven by the increasing commoditization of bandwidth and the desire for carriers and ISPs to move up the value chain, as well as by distributors and VARs wanting to add more value to the products they supply.

The multifunction Business Gateway can be the final piece of the puzzle that Service Providers have been trying to complete. SMEs are reluctant to rely on hosted services to provide their critical network functions and prefer to have a single piece of on-site equipment that will still function even if their broadband link fails.

7-Becoming a Profitable Managed Services Provider to the High-Growth SME Market

Analysts from In-Stat/MDR estimate that the new converged "business gateway" market will grow from $1.5m in 2005 to $2.1bn in 2010 and the edgeBOX is well positioned to capture a significant market share through a unique technical systems approach and a distinctive combination of features, price, and channel strategy.

The edgeBOX clearly differentiates itself from the competition by using commodity low-cost (COTS) hardware and a wealth of integrated and optimized, sophisticated open-source applications to provide converged IT, IP, and VoIP services.

Telecom Service Providers can use edgeBOX as a platform (Customer Premises Equipment or CPE) to provision Managed Services to their SME customers. The product has been designed specifically with this channel in mind, and so it can include an end-to-end application solution for Managed Services called iTEMS - a dedicated management platform for the Network Operations Centre.
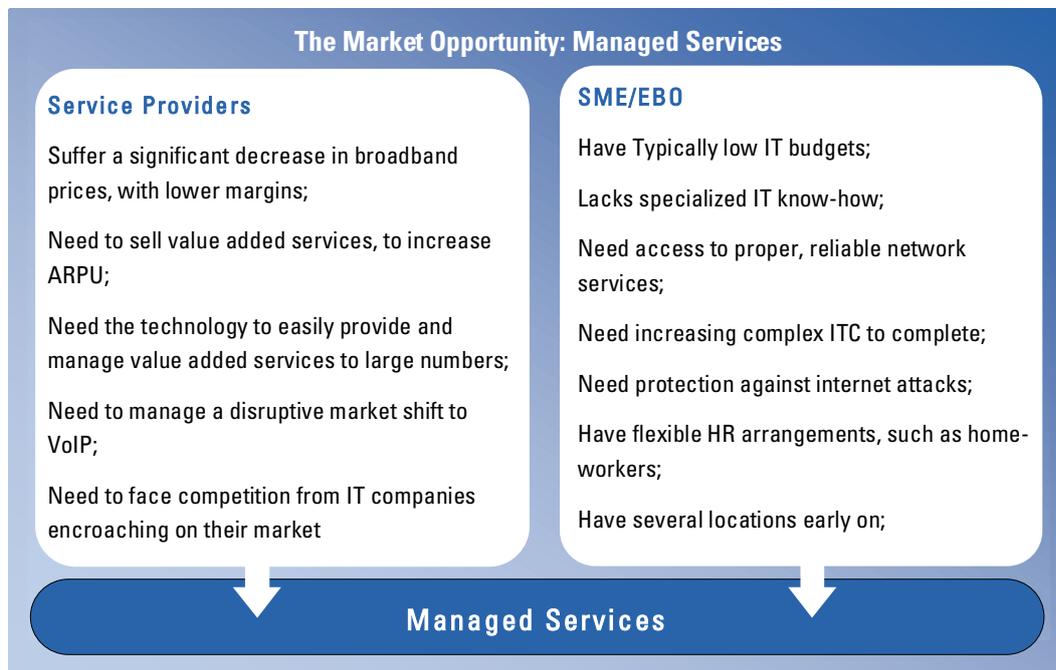
iTEMS automates phases of the edgeBOX business life cycle, thereby enabling effective large scale deployments. iTEMS provisions software upgrades, alarm management, subscriber tracking and inventory management. It contributes to substantially reducing the time, effort, and costs of operating the edgeBOX, thereby increasing per-customer revenue.
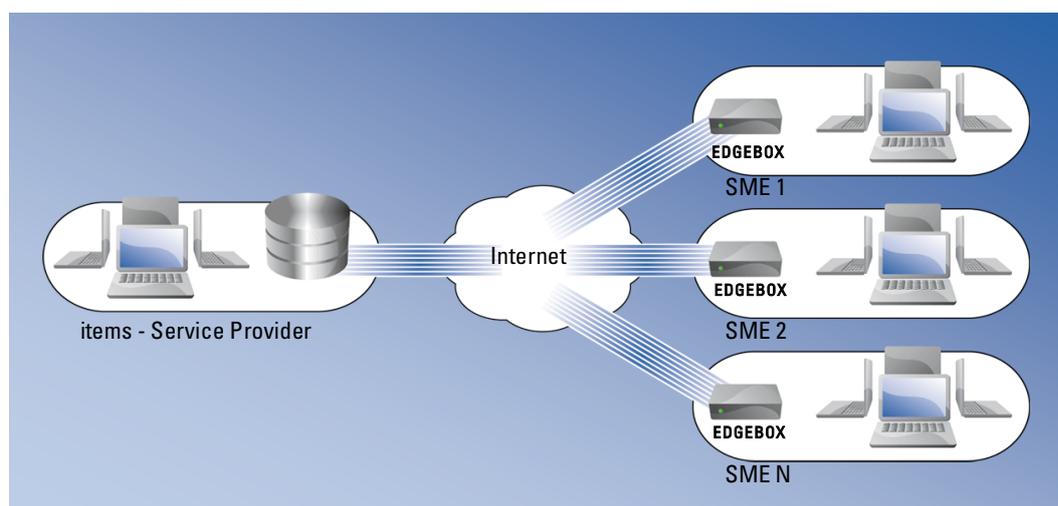
Deploying edgeBOX as a Business Gateway at the edge of a customer's network allows the Service Provider to offer a customized package of value added services on top of the standard bandwidth charge, with low investment in customer support. Services supplied to the end customer are remotely configurable and can be changed at any time without on‑site intervention.

One of the main advantages of edgeBOX is that it is a fully integrated, pre‑configured network services platform that is much simpler to monitor and maintain than traditional network server platforms. This means the Service Provider does not need highly qualified and certified technicians to provide customer support and the time spent on support issues is reduced. These savings can be passed on to the customer who is normally charged very high fees for support and maintenance of IT infrastructure.

The edgeBOX is the final piece of the puzzle that Managed Service Providers have been trying to complete. SMEs are reluctant to rely on hosted services to provide their critical network functions and prefer to have a single piece of on‑site equipment that will still function even if their broadband link fails. edgeBOX provides exactly this kind of CPE and now the service providers can realistically perform zero touch deployment, remote management and monitoring with iTEMS installed at their NOC.

The Market Opportunity: Managed Services

Service Providers

Suffer a significant decrease in broadband prices, with lower margins;

Need to sell value added services, to increase ARPU;

Need the technology to easily provide and manage value added services to large numbers;

Need to manage a disruptive market shift to VoIP;

Need to face competition from IT companies encroaching on their market

SME/EBO

Have Typically low IT budgets;

Lacks specialized IT know-how;

Need access to proper, reliable network services;

Need increasing complex ITC to complete;

Need protection against internet attacks;

Have flexible HR arrangements, such as home-workers;

Have several locations early on;

Managed Services

The Multifunction Business Gateway Value Proposition: edgeBOX Business Case Scenarios

The SME term covers a broad range of companies in different industries and with varying numbers of employees, leading to varied ICT requirements.

The edgeBOX can easily cater for these different business needs by providing a platform that can be tailored for particular vertical markets.

Examples of typical packages that can be offered to companies with 1 to 500 employees requiring a high level of ICT functionality are shown in the following Sections.

8-Managed Data Services Provider Scenario

This is the entry level package that provides everything a customer needs to set up and run a secure, broadband connected network for a small to medium sized office.

The package includes the following services:

Managed Data Service Package

edgeBOX installed and configured with the following services activated:

Fine grained Network Access Control (NAC) with full authorisation, authentication and accounting

Web server/intranet hosting locally/remote

Email service with local relay and survival mode for internal email communications

Windows-like login for employees desktops

Windows-like File (storage server) and Print server for employees

LAN management (IP Address management, NAT, DHCP, DNS server)

Bandwidth management

Fully authenticated Firewall

Antivirus and antispam

Proxy server Content filtering

WiFI LAN Management

Secure access (VPN) for remote offices and teleworkers

VoIP gateway (to the hosted softswitch / IPCentrex)

Secure access (VPN) for remote offices (IPSec) and teleworkers (PPTP,. L2TP)

Limited telephone and email support provided during office hours.

Software updates for edgeBOX services.

![Critical Links logo]

A Cost Comparison of Alternatives

To setup a traditional solution, the Customer would have to acquire several hardware and software components with their associated ongoing support costs along with initial integration and configuration fees. These costs vary greatly depending on the components and services chosen. An example is provided below for a company with 20 staff:

edgeBOX Managed Data Service Package		Alternative Solution	
Setup Costs	**€0**	**Setup Costs**	**€5,700**
–		MS SBS for 20 users	€1,500
–		HP Proliant ML350 server	€2,100
–		Installation costs	€1,800
–		Firewall appliance	€300
Monthly costs	**€250**	**Monthly costs**	**€580**
–		Firewall appliance	€60
–		Antispam & Antivirus	€120
–		Support and maintenance*	€400

Table 1 edgeBOX Managed Data Services package compared

A typical charge to provide basic support for a Microsoft Server based solution for an SME with 1 to 25 employees covering telephone/email support during working hours is €400.

In comparison, for a company with 100 users, prices would rise dramatically. With average SBS costs per additional user of €60, software license costs would amount to €5,000 and the cost of a more powerful server hardware to €4,000, giving a total setup cost of €11,100. For the ongoing costs, maintenance would rise to at least €1,500 per month and anti-virus and anti-spam subscriptions to circa €600, summing up to €2,100.

The business case for the customer of the "Managed Data Services" package is obvious; a saving on capital expenditure of €5,700 followed by a monthly saving of €330 (€580-€250) for ongoing software updates, maintenance and support.

Business Case for the Service Provider

The business case for the Service Provider is also apparent; the fees for providing a 512K/1Mb business broadband connection are around €60 (although prices vary greatly), which have now been increased to €250 a month. The initial investment in an edgeBOX unit of €1,200 will be returned in is little as 6 months. Note that the customer savings figures from Table 1 clearly show that the Service Provider can further increase its revenues by increasing monthly fees and/or adding setup fees. With a contract of just one year and the pricing above (€250) the Service Provider will make an additional €1,000 in the first year, rising to €3,200 if the contract covers a two year period.

9-Managed Voice and Data Services (converged package) Provider Scenario

The main business opportunity in this scenario is to consolidate all the IT and communications technology for a company onto a single network, with all services and support provided by a single supplier. The Service Provider generates additional revenue from supplying an IP telephony service as well as standard internet access.

Telcos and ISPs can position this broadband based solution in the market aiming to drive much higher revenue and recurring service fees for the bundled solution, while delivering real cost and productivity gains to their customers.

edgeBOX provides a network infrastructure for VoIP services to be deployed upon. QoS and security are major considerations when deploying a VoIP solution at a customer's site. Many customers do not have networks that are sufficiently well configured or secure enough to simply plug in an IP-PBX and expect a reliable VoIP service to result. edgeBOX has all the QoS and security services necessary for a "VoIP out of the box" installation, entirely configured and maintained via an integrated and user friendly web interface.

The ease of migration is another factor of paramount importance when introducing VoIP services to a new customer. edgeBOX supports a range of FXO/FXS and BRI/PRI ISDN cards for integration with PSTN lines and existing legacy PBX systems. This also provides a range of other benefits such as continuity of service by providing PSTN backup to the IP lines in case of broadband down time; allowing a customer to retain their existing phone number; and giving the option of creating routing tables to ensure calls are directed over IP or PSTN networks according to cost/quality requirements.

The customer can significantly reduce their monthly expenditure on voice and data connectivity and infrastructure by deploying a converged solution based on edgeBOX.

The package includes:

Managed Voice and Data Service Package

edgeBOX installed and configured with the same services as above activated plus:

- Fully featured IP-PBX with IVRs, voice mail, conferences,
- One FXS connection to the PSTN for "survival Mode" operation
- Premium (prioritised) Voip (through bandwidth management / QoS)
- IP telephony service including unlimited national calls and 3,000 minutes of long distance calls
- Telephone and email support provided during office hours

Package Cost - €500/month

A Cost Comparison of Alternatives

To compare this package to a traditional solution both the voice and data elements need to be considered:

edgeBOX Managed Voice and Data Service Package	
Setup Costs	**€0**
–	
–	
–	
Monthly costs	**€500**
–	
–	

Alternative Solution	
Setup Costs	**€10,200**
Data Setup Costs*	€5,700
PBX	€4,000
PBX Installation costs	€500
Monthly costs	**€1,034**
PBX maintenance contract (10%)	€40
Fixed line costs (calls and rental)**	€414

Table 2 edgeBOX Managed Voice and Data Services package compared.

* From Table 1   ** Average fixed line spend of SMEs in the UK.

It is clear that, for a comparable solution the customer can benefit from a total saving on capital expenditure of €10,200 followed by a monthly saving of €534 (€1034-€500).

Business Case for the Service Provider

In this scenario, revenue for the Service Provider has grown from €60 per month to €500 (assuming an upgraded DSL line has been provided). With the investment on an edgeBOX unit costing €1,400 (including a TDM option) ROI will take place in under 3 months. With a contract of just one year, the Service Provider will make an additional €3,800 in the first year, rising to €9,000 if the contract covers a two year period.

The above cost savings exclude the intangible benefits that integrated IT and telephony networks also provide such as improved staff productivity and integration with IP based applications. As well as the edgeBOX unit the Service Provider could offer a bundle of additional hardware such as IP phones, PSTN phone adapters and WiFi phones. This could be sold as a "migration" package.

10-Managed Extended Data and Voice Services Provider Scenario

This is similar to the above package but with more comprehensive support.
The package is as above but with:

Managed Extended Voice and Data Service Package
Telephone and email support provided 24/7
One BRI connection to the PSTN for "survival Mode" operation
Operator/receptionist portal
Offsite backup
Regular reporting on network usage
Same day on-site intervention
Package Cost - €800/month

A Cost Comparison of Alternatives

A typical charge by companies to provide a managed network service with support for a Microsoft Server based solution for an SME with 1 to 25 employees covering 24/7 telephone/email support, proactive monitoring and same-day on-site intervention is approx. €800 per month. This means the figures for the package will be:

EdgeBOX Managed Extended Voice and Data Service Package		Alternative Solution	
Setup Costs	€0	Setup Costs	€10,200
–		Data Setup Costs*	€5,700
–		Voice Setup Costs**	€4,500
Monthly costs	€800	Monthly costs	€1,434
–		Data Service Monthly Costs*	€580
–		Voice Service Monthly Costs**	€454
–		Additional Support Costs	€400

Table 3 edgeBOX Extended Voice and Data Services Packaged compared.
* From Table 1 ** From Table 2

So this provides the customer with a similar capital expenditure saving of €10,200 followed by a monthly saving of €634 (€1,434 – €800).

Business Case for the Service Provider

The Service Provider's revenue has grown from €60 per month to €800 (assuming an upgraded DSL line has been provided). This will give a complete ROI for an edgeBOX unit costing €2,000 (including a PRI option) in under 3 months. With a contract of just one year the Service Provider will make an additional €6,880 in the first year, rising to €15,760 if the contract covers a two year period.

11-Conclusion

A summary of the three business scenarios considered is provided in the following table:

	Managed Data Service	Managed Data and Voice Service	Managed Ext. Data and Voice Service
Costumer			
Capex Saving	€5,700	€10,200	€10,200
Monthly Opex Saving	€330	€534	€634
Service Provider			
Increased Revenue (1 year cont.)	€1,000	€3,800	€6,800
Increased Revenue (2 year cont.)	€3,200	€9,000	€15,700

Table 4 edgeBOX Summary of Benefits for Customer and Service Provider

From the scenarios outlined it can be seen that the business case for edgeBOX is proven from both a Service Provider and a customer's point of view.

By simply supplying edgeBOX as an easy to deploy and maintain Managed Services platform, the Service Provider can offer cost savings to the customer while generating new revenue from providing value added services such as security, locally hosted mail and web sites, wireless access and IP telephony.

The customer can potentially save thousands of Euros on capital expenditure and hundreds of Euros a month on phone line rental, call costs and support and maintenance fees while the Service Provider significantly increases per subscriber revenue and locks a customer into a long term contract.

The solution captures a new market opportunity created by the advent of low cost broadband internet access that: (1) generates demand for sophisticated, integrated, low-cost, and easy-to use network services from SME's which lack IT expertise and (2) pushes Telecom Service Providers to offer value-added services to differentiate from competitors, increase per-subscriber revenue, and move away from the increasingly commoditised bandwidth business.

The edgeBOX clearly distinguishes itself from competing products by using commodity low-cost (COTS) hardware and a wealth of integrated sophisticated open-source applications to provide converged IT, IP, and VoIP services.

Details of Managed Services Packages

Service Description	Bronze Managed Services	Silver Managed Services	Gold Managed Services	Supported in edgeBOX by...
Broadband Connectivity	1Mb/s	4Mb/s	8Mb/s	Integrated ADSL, 3G, cable modem
Fine-grained controlled and monitored access to the network for all employees	v	v	v	NAC, Firewall, Web proxy
Web page hosting and intranet	v	v	v	Web Server, OpenCMS
Email hosting	v	v	v	....
Single unified accounts for windows desktop users	v	v	v	Windows PDC
Shared document storage for Windows users	v	v	v	Windows PDC, File server
Shared printer server for Windows users	v	v	v	Print server
LAN management	v	v	v	NAT, DHCP, DNS...
Control the access from unauthorised users	v	v	v	Statefull firewall
Antivirus protection for email and shared documents	v	v	v	AV server (Mcafee, Sophos, ClamAV...)
Control and monitor employee access to websites	v	v	v	Content filtering
Improved access to frequently visited web sites	v	v	v	Web caching
WiFi LAN Management	v	v	v	WiFi AP, controller,
IP telephony service	v	v	v	IP trunks from the IP-PBX for making VoIP calls
Secure access for employees connecting from home/abroad	v	v	v	L2TP, PPTP VPNs
Yearly service / software updates	v	v	v	Software update service
Private domain name management	x	v	v	
Secure access between offices	x	v	v	IPSec VPNs
Premium email service: "survival mode" for internal communications; improved performance through local relaying	x	v	v	Email server
Advanced PBX features: voice mail, customised IVR, conferences, voicemail2email, ACD, LCR	x	v	v	IP-PBX
Bandwidth management	x	v	v	QoS, NAC
Premium (prioritised) VoIP quality	x	v	v	QoS
PSTN connection - backup "survival mode" operation	x	1 FXS	1 BRI	IP-PBX, VoIP Gateway
Operator/receptionist portal	x	v	v	IP-PBX
Integration with existing legacy PBX	x	x	v	IP-PBX
Enterprise instant messaging (IM) with presence	x	x	v	Jabber Server
Nightly backup of critical data on data centre	x	x	v	Backup service
Shared calendar and contacts	x	x	v	OpenGroupware Server
Call packages	IP calls to other VoIP accounts only	unlimited national and 3,000 mins international calls to PSTN network	unlimited national and 3,000 mins international calls to PSTN network	
Telephone and email Support	limited / office hours	office hours	same day onsite intervention	

For more information: www.edgebox.net

About Critical Links

Critical Links (www.critical-links.com) is an international networking software company and provider of edgeBOX, a converged multi-function device or business gateway targeted at SMBs and Enterprise Branch Offices. edgeBOX is available in a wide range of scalable hardware platforms, including standard servers, and has the best feature to price ratio in the market, making it the ideal choice for cost savvy SMBs. edgeBOX typically replaces 4-7 single-function devices required to deliver an equivalent set of services, fully remotely managed, with significantly lower TCO. Telecom Service Providers and Managed Services Providers offer edgeBOX as a service to their SMB customers.

Critical Links is a wholly owned subsidiary of Critical Software SA, established in 1998, with over 100 employees, with a presence in the UK, USA, and Portugal. The company is CMMI Level 3 compliant and has a reputation for producing mission and business critical networking and telecoms solutions for the telecoms, public sector, industry, aerospace and defence markets, with customers such as Vodafone, Deutsche Telekom, Infineon Technologies, NASA, EADS and ESA.

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