

# Opportunities of CDMA-WLAN Convergence Services in Koran Enterprise Market<sup>†</sup>

HYUN-MOON, SHIN<sup>1</sup> AND HYUN-SOON, SHIN<sup>2</sup>

<sup>1</sup>IT Technology Strategy Research Division <sup>2</sup>Digital Home Research Division  
Electronics and Telecommunications Research Institute  
161 Gajeong-dong, Yuseong-gu, Daejeon, 305-350  
KOREA

<sup>1</sup>[hms shin@etri.re.kr](mailto:hms shin@etri.re.kr) and <sup>2</sup>[hsshin@etri.re.kr](mailto:hsshin@etri.re.kr)

**Abstract:** - The telecommunications operators can enhance a convenience and profitability of a client through convergence service for an enterprise by creating the new value of the convergence environment and providing the function which WLAN and CDMA individually provide. Also the telecommunications operators can develop a new business model. In this study, we made certain about the possibility for the CDMA/WLAN convergence service in enterprise market. Especially, the business opportunities exists if the charming appeal point including the major benefit improvement provided by the convergence service for an enterprise and cost support system, and etc. is secured can offset the additional cost factor.

**Key-Words:** - Convergence, Enterprise Market

## 1 Introduction

In the moving condition within the enterprise or building, the trend that the situation required for the voice communications and information processing gradually increases is accelerated. The communications means of employees is classified into the personal mobile terminal, personal computer for a transaction, and the regular telephone and it is limited to the particular field. But the situations where an always and seamless connection to a system by one terminal are increased now.

Moreover, the telecommunications operators can enhance a convenience and profitability of a client through convergence service for an enterprise by creating the new value of the convergence environment and providing the function which WLAN and CDMA individually provide. Also the telecommunications operators can develop a new business model. As a result, the telecommunications operators can be leader of the information and communications convergence providing the integration service specialized in the business environment, VoWLAN(Voice over WLAN), the WLAN/CDMA integration, and etc., and the initial market about data service at the enterprise market can

be secure. Outside of an enterprise, the enterprise image preemption and solidity are possible through the wireless and wired convergence business. Inside of an enterprise, the voice traffic reduction through VoIP and data traffic creation and high-price PCS subscriber churn-in and PCS subscriber churn-in and lock-in effect can be obtained. But in the present enterprise market, it is in the verification step about the possibility of data traffic and VoIP service in the enterprise market according to the first transition of WLAN and general CDMA integration.

## 2 Market Trends

The advantage of the IP-PBX base solution is brought to the fore. While the innovation task of the organization interior infra gets accomplished, the convergence service market for an enterprise is predicted with increase in demand. In Korea, since 2004, the replace of IP-PBX increases in the preexistence PBX system while the demand for data integration service and voice call is increased in the market of company [2]. The world wide related equipment market is expected as 2.5 thousand dollars in 2008 with enlargement while recording the growth

<sup>†</sup> This work was supported by the IT R&D program of MIC/IITA.  
[2007-S-010-01, Development of Ubiquitous Home Media Service  
System based on SMMD]

rate of on the yearly average 41.3% around IP-PBX and internet protocol phone [3]. The dual-mode terminal is the situation in which the service activation is difficult due to the size and battery lifetime, and etc.. However, the world wide dual-mode terminal market is expected to increase to 9,008,000 in 2009 while the dual-mode terminal improves a performance and design of the terminal in maser vendors including Nokia and Motorola, and etc.[4].

Supporting delivery of mobile data solutions to enterprise is a clear value proposition for WLAN, especially as security of Wi-Fi services improves with the implementation of 802.11i standard. Launch of GPRS networks allowed mobile carriers to grab a piece of the enterprise data pie, although it remains small compared to fixed-line and consumer non-messaging mobile data revenue (Fig. 1).

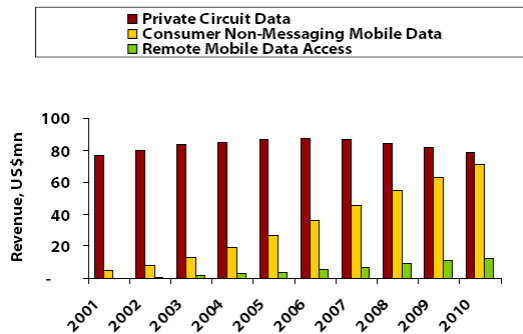


Fig. 1. Enterprise Data Revenue: Private Circuit and Mobile Remote Access (Source: Pyramid Research Fixed Communications and Mobile Data forecasts, 4Q05.)

However, VoWLAN on enterprise is unlikely to be initiated by mobile carriers. Mobile voice is the bread and butter of mobile carriers' enterprise business, and large accounts are strictly guarded and retained via premium customer service and price discounts. But demand for cheap voice does exist, as examples of trials and service rollouts prove. Hotels, hospitals, large retailers and campuses make up most of the list of current VoWLAN users, and their reasons for the adoption are as follows:

- The main advantage of VoWLAN systems is their lower cost compared to traditional PBX solutions, as well as integration of Internet and voice in one system. If the quality of voice is acceptable, then the demand among other types of enterprises is certain to emerge. Similar to VoIP, new installations and full

systems replacements will be the first to buy into the cost-effectiveness of VoWLAN.

- New WLAN systems combine public and private use through different profiles and allow infrastructure reuse: e.g., in addition to broadband access for customers, hotels can use the same systems for internal communications.

We expect that VoWLAN will be introduced by a number of enterprise verticals and remain in these niche segments in the short to medium term. But slow implementation of security solutions and the need to improve quality of voice service will hold back a rollout of wide-scale VoWLAN enterprise services in the next one to two years. If cost of QoS-enabled WLAN switches remains cheaper than cost of mobile PBXs and quality is similar, there is no doubt the business case for enterprise VoWLAN will be there.

Pyramid Research [1] believes that Brazil is the most advanced market in the region when it comes to the commercialization of WiFi for both public consumption and enterprise use. We came to this conclusion because many large Brazilian companies have installed WLANs. The size of the Brazilian market (in terms of the number of corporate mobile subscribers--over 5.5 million in 2005), as well as the now-commonplace deployment of WLAN in the enterprise segment bodes well for future demand for dual-use handsets in the Brazilian corporate market. Furthermore, unlike in markets such as Argentina and Chile, the scale issue of having at least 100 users is less of a hurdle in Brazil due to the number of larger companies.

### 3 The Method for Survey

The systematic investigation considering the application service characteristic was performed under the survey design considering the business field and enterprise scale for the business opportunity analysis of FMC for an enterprise with the standardized making up a question structured about the convergence mobile service concept for an enterprise. For the sample size 367 unit, the data collecting method directly took the interview investigation method by the random sample allocation considering the business field and enterprise scale. The object of interest region was limited to Seoul and national capital region. The sample inquiry object limited to the use demand and the enterprise customer having among the present firm object IT use of service about the IT

service. The sampling method performed to the purposive quota sampling method considering the purpose of investigation.

In 2004, the SOHO enterprise was exposed to occupy 93.32% of the whole enterprise in Korea. And the sampling result allocated in consideration for this research investigation is the same as that of the Table 1.

Table 1. Enterprise Classification

Scale Classification		SOHO	Small Biz	S-Medium Biz	Medium Biz	L-Medium Biz
Total Ratio		93.32% (2,976,954)	5.67% (180,822)	0.93% (29,560)	0.04% (1,339)	0.03% (847)
Industrial Classification	Financial	1.91%	4.09%	3.81%	2.18%	2.72%
	Distribution	3.54%	2.45%	2.45%	3.00%	2.45%
	Manufacturing	3.00%	4.09%	3.81%	2.18%	2.45%
	Construction	1.91%	7.08%	3.27%	0.54%	0.82%
	Service	3.54%	4.90%	3.81%	1.36%	0.27%
	IT/Broadcasting	3.27%	3.81%	4.63%	1.63%	1.36%
	Public/Medical/Education	3.54%	3.27%	4.63%	0.82%	1.36%
	Total	20.71%	29.70%	26.43%	11.72%	11.44%

#### 4 New Business Opportunities in Enterprise

From the survey results, it is presumed to 3,055,549 employees of 368,146 enterprises because these have the potential demand. That is, due to risk factors perceived with the uncertainty about the service utility in which the consumers feel as to the new communications service introduction of the growth transition analysis result most of the service potential demand and diffusion, the acceptance and diffusion are expected to be activated after the some time passes.

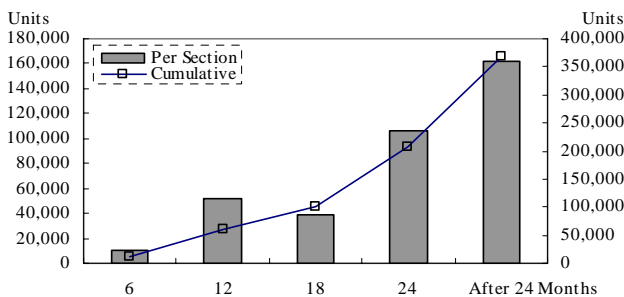


Fig. 2. The expected number of enterprises for the convergence service

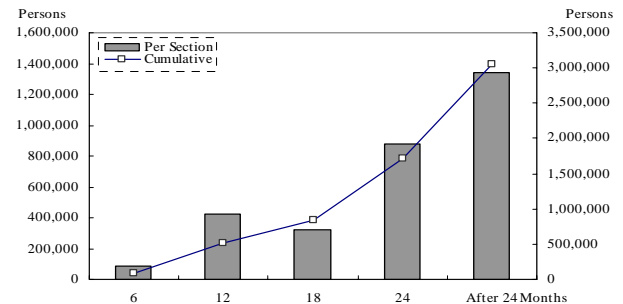


Fig. 3. The expected number of employees for the convergence service

As to the current communications facility and integrated service application, it exists in the convergence service activation for an enterprise due to the similar service market, which is not yet activated with the investigation result about the communications facility for an enterprise and integrated service application present condition the service stability and security level secure difficulty, and the additional cost according to the service administration and usage with difficulty. However, the benefit like the addition data service provided by the convergence service for an enterprise is emphasized. It is determined that the business opportunities exist if the service strengthening the security and stability is provided.

As to the application use pattern and the investigation result about the application use pattern, a difficulty exists in the convergence service providing for an enterprise due to the competitive power member about the lack of capacity, satisfying the high requirement of the specific type of business and large

size enterprise and large size SI and ASP enterprise. However, the integrated service consisting of the application key with the first stage of service a part of a form is provided through a consortium with the itself service ability development and SI and ASP enterprise. If the gradually various detail services are provided and can be appealed to not only the new customer but also the existing fixed data application service client, it is determined that the business opportunities exist.

If we consider at the side of consumption for the enterprise convergence service, a difficulty exists in

the service activation due to the low adoption for the service concept, the low voice quality of VoWLAN, the high uncertainty about the addition cost payment, the frame benefit about the amount of sales improvement, and etc.. However, it is determined that the business opportunities exists if the charming appeal point including the major benefit improvement provided by the convergence service for an enterprise and cost support system, and etc. is secured can offset the additional cost factor.

Table 2. Analysis as to the current communications facility and integrated service application

	Analysis of The Survey Results
<b>PBX Installation</b>	<ul style="list-style-type: none"> <li>○ The installation /utilization of SOHO is most low (10.6% of the total PBX Installation Industry), and the S-Medium Biz is most the highest (30.6% of the total PBX Installation Industry)</li> <li>○ In industrial classification, it is appeared without big difference</li> </ul>
<b>Practical Use of a Similar Convergence Service</b>	<ul style="list-style-type: none"> <li>○ On the whole, the utilization of the similar convergence services is low (8.7% of total survey industry)</li> <li>○ In the Small Biz, the similar service availability is most high shown (46.9% among total enterprise).</li> <li>○ A movement is frequent and the activity ratio high shows up in the business in which the need about a communications is strong (Distribution: 34.4%, Construction: 18.8%, Service: 15.6%).</li> </ul>
<b>Use of Internet Access Networks</b>	<ul style="list-style-type: none"> <li>○ The availability ratio of the high-speed internet of the cost inexpensive with recording the scale of an enterprise is small high shows up (90.8% among SOHO).</li> <li>○ As the scale of an enterprise is big, relatively it is expensive but the common carrier leased line availability ratio in which a stability and security are maintained high shows up(76.5% among Medium/L-Medium biz).</li> <li>○ In the business in which a stability and security are held in high reputé, the common carrier leased line availability ratio high shows up (68.5% among financial).</li> </ul>

Table 3. Analysis as to the application use pattern

	Analysis of The Survey Results
<b>Utilization of Specific Services</b>	<ul style="list-style-type: none"> <li>○ The demanding level concentrated on the cooperation system (45.2%), the online account system (41.7%), and the financial management system (40.9%) is exposed to be shown.</li> <li>○ It shows up that the demanding level at the business which is specialized and can apply to a task is relatively high (The first rank in the distribution : material/inventory management)</li> <li>○ It shows up that the utilization about the various services are high as the enterprise scale is high.</li> </ul>
<b>Level of Need for Work Applicability</b>	<ul style="list-style-type: none"> <li>○ The demanding level on the cooperation system (3.42), the online approval system (3.34), and the financial management system (3.38) is high.</li> <li>○ It shows up that the demanding level at the business which is specialized and can apply to a task is relatively high (The first rank in the distribution : material/inventory management)</li> <li>○ It shows up that the utilization about the various services are high as the enterprise scale is high.</li> </ul>
<b>Needs for Access in Moving</b>	<ul style="list-style-type: none"> <li>○ The demanding level on the cooperation system (65.4%), the online approval system (34.6%), and the CRM / PRM (29.2%) is high.</li> <li>○ It shows up relatively that the demanding level at the business which is specialized and which it can apply to a task is high (The second rank in distribution: material/inventory management)</li> <li>○ As the enterprise scale is enlarged, the demanding level is high in the various task applications about the services.</li> <li>○ The connection request is high and it shows up in the moving condition in services in which fixed connection demand (the specific service utilization and the demanding level for task applications) are high.</li> </ul>

## 5 Conclusion

The telecommunications operators can enhance a convenience and profitability of a client through convergence service for an enterprise by creating the new value of the convergence environment and providing the function which WLAN and CDMA individually provide. Also the telecommunications operators can develop a new business model. In this

study, we made certain about the possibility for the CDMA/WLAN convergence service in enterprise market. Especially, the business opportunities exists if the charming appeal point including the major benefit improvement provided by the convergence service for an enterprise and cost support system, and etc. is secured can offset the additional cost factor.

Table 4. Analysis at the side of consumption for the enterprise convergence service

	Analysis of The Survey Results
<b>Concept Test</b>	<ul style="list-style-type: none"> <li>○ On the whole, the evaluation for the expected benefit and service concept is low (From 2.84 to 3.10)</li> <li>○ In an enterprise more than the middle scale, and information and communications/broadcasting business, the service concept and expected benefit is relatively high.</li> </ul>
<b>Decision Factors for Introduction</b>	<ul style="list-style-type: none"> <li>○ On the whole, the quality of service guarantee (3.94), and the discount for service price (voice - 3.91, data - 3.85), and the convenience of service (3.92) is high.</li> <li>○ The key decision factor of introduction is adopted by considering of the industrial classification characteristic (The first rank of financial: quality of service guarantee)</li> </ul>
<b>Factors Related in Commercialization</b>	<ul style="list-style-type: none"> <li>○ The additional payment intention according to the convergence service administration for an enterprise is below than normal (Additional payment intention enterprise: 29.4% among the whole sampled enterprise)</li> <li>○ The rate of desiring the wireless LAN switch and IP-PBX support, and the terminal subsidy support (40~50%) among the plans for support about the additionally required cost is the highest.</li> <li>○ There exists the trade off between the additional cost factor and the service benefit factor.</li> </ul>
<b>Expected Benefits</b>	<ul style="list-style-type: none"> <li>○ On the whole, the expected benefit in work utility improvement (3.33) and customer satisfaction improvement (3.14) is high.</li> <li>○ The estimate of the enterprise in which want to introduce the convergence service is higher than that which don't want to introduce the service.</li> </ul>

## 4 Conclusion

Please, follow our instructions faithfully, otherwise you have to resubmit your full paper. This will enable us to maintain uniformity in the conference proceedings as well as in the post-conference luxurious books by WSES Press. The better you look, the better we all look. Thank you for your cooperation and contribution. We are looking forward to seeing you at the Conference.

### References:

- [1] Pyramid Research, *WLAN-Cellular Convergence: The Mobile Carrier Business Case for WLAN, UMA and VoWLAN*, 2006.
- [2] <http://www.etnews.co.kr>
- [3] <http://www.idc.com>

[4] <http://www.infosyncworld.com>

[5] Nigel Gilbert, *Researching Social Life*, 2<sup>nd</sup> Edition, 2002.