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**APT REPORT**

**on**

**FIXED MOBILE CONVERGENCE SERVICES**

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**APT REPORT ON FIXED MOBILE CONVERGENCE SERVICES**

1. **Background**

As decided in AWG-11 in Chiang Mai, Thailand, the study of Fixed Mobile Convergence (FMC) was carry on to the development of new report on FMC Services. This report will be handled inside the Task Group Fixed Mobile Convergence (TG-FMC) within Working Group Service and Application (WG-SA).

The scopes of this report are:

1. To provide information regarding the drivers and motivations of current FMC Services implementation among APT members
2. To provide information regarding some key success factors of current FMC Services implementation among APT members
3. To update and review of market trends related to FMC Services
4. To Identify potential new advanced FMC services

In order to complete this report, in the AWG-12 meeting in Xiamen, China (P.R. of), it was agreed to develop “Questionnaire on Fixed Mobile Convergence Services” (AWG-12/OUT-15) to gather relevant useful information from the APT member countries.

1. **Questionnaire Summary**

The Questionnaire developed in AWG-12 includes the following questions in generals:

1. FMC deployment in term of FMC related regulations, FMC commercial offerings, FMC solutions and activities specific in APT member countries. Motivations, currents FMC subscribers and views of success factors on FMC deployment also requested to be described.
2. Market and Competitive landscape Related to FMC Services and trends regarding new FMC advance services possibility
3. Views and plans from APT members regarding Advanced FMC Services
4. Future Requirements of FMC Services

The complete questionnaire can be viewed in the document AWG-12/OUT-15.

1. **Summary of the Questionnaire Responses**

Before AWG-13 meeting in Da Nang, Socialist Republic of Vietnam, several questionnaire responses were contributed by members and they were discussed during the AWG-13 meeting. The responses summary is shown in the table 1.

Table-1 Questionnaire Responses

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Document No.** | **Description** | **Source** |
| 1 | AWG-13/INP-23 | Response to the Questionnaire on Fixed Mobile Convergence | Vietnam (S. R. of) |
| 2 | AWG-13/INP-76 | Response to the Questionnaire on Fixed Mobile Convergence Services | China (P.R. of) |
| 3 | AWG-13/INP-91 | Response to the Questionnaire on Fixed Mobile Convergence | Rep. of Korea |
| 4 | AWG-13/INP-108 | Response to Questionnaire on Fixed Mobile Convergence | Thailand |
| 5 | AWG-13/INP-119 | Response to Questionnaire on Fixed Mobile Convergence | Malaysia |
| 6 | AWG-13/INP-123 | Response to the Questionnaire on Fixed Mobile Convergence Services | PT Telkom Indonesia |

The questionnaire responses were compiled and was included in the temporary document on AWG-14 (AWG-14/TMP-08). The questionnaire responses and other references were used in developing this report.

1. **Drivers and Motivation of Current FMC Services Deployment**

There are two main drivers for fixed mobile convergence, namely business and service perspective [AWG-11/OUT-04]. From the business perspective, it can be learned that fixed operators try to take the traffic back and the mobile operators have the target to extend their traffic. While from the service perspective, the FMC solutions represent defenses against FMS (Fixed Mobile Substitution). Figure-1 illustrates Fixed, Mobile & its ecosystem and the basic idea of what is FMC and why it is happened.



**Figure-1: Fixed, Mobile & Its Ecosystem**

Study from questionnaire and other references shows that there are not yet FMC regulation schemes implemented in the Asia Pacific regions to be consider as main driver for FMC service deployment. Regulations in some countries such as China, Korea, Thailand and Vietnam, accomodate operators to obtain licenses for fixed and mobile services. Other country already have converged communications and multimedia industry, e.g. Malaysia, and the rest still have separate network-service approach regulations, e.g. Indonesia. The study also shows that operators, vendors and other institutions have strong perspective that the drivers of FMC Services deployement were expected came from business and service factors.

There were four common drivers for many developments in telecommunication shape the future [OECD2012], i.e.:

1. Customer demand
2. Technological development
3. Business imperatives from network and service firms
4. Regulatory requirements

Those common drivers can also be perceived as the driver of FMC Service deployment. While from the survey of APT on FMC services, those common drivers also perceived by the respondents and also a specific drivers for providing telecommunication basic services for the rural area.

The motivations behind FMC are to provide users with easy to use and desirable services, and to enable service providers to deliver services with cost effective networks. The user motivations are to enable more convenience experience with required list of characteristics as follow [ANRITSU-FMCWP]:

1. Mobility of people and the need to communicate on the move is increased, and therefore the demand for mobile communications
2. Conventional fixed networks continue to serve the home or the office
3. Wide range of services within a uniform network and mobile connection is most important
4. Terminal mobility allows the customer the use of this (personal) terminal, e.g. his telephone at any place, at home, in the office or en route even abroad
5. Services mobility provides for the customer a common set of services independent of the access type and location. The services should have the “same look and feel” even in different networks
6. Personal mobility means reachability, in the sense that the customer is reachable with one number, his personal number, everywhere. He can define several reachability profies (private, office) and he can change his progiles, especially the terminal where he wants his calls to arrive, from any terminal
7. **Key Success Factors of Current FMC Services Deployment**

From the survey of FMC Services in APT members, it can be learned that there were some key success factors for the deployment of FMC Services. Those key success factors are:

* + - * 1. Supportive regulations
        2. Mature and cost effective technology
        3. Integration of devices, networks and applications
        4. Brand power of the offerings

Other reference also add the informations on how the convergence services can be deployed [Larson2007]. Table 2 shows the stage of convergence services implementations that can be refered in the FMC Service deployment with appropriate key success factors for each stage.

Table-2 Convergences Service Implementation Stages

|  |  |  |
| --- | --- | --- |
| **Stage** | **Stage Description** | **Key Success Factors** |
| Stage 1 | Service Deployment: The initial service deployment stage, with a strong emphasis on attractive pricing of combined fixed-mobile service bundles; it provides a single point of contact for sales, billing and customer service. | 1. Average Revenue Per User (ARPU) 2. Combination of Double and Triple Play 3. Solution with Pre-integrated for FMC 4. Strong fundamentals (FMC architecture, Operations and customer support and contents acquisition, management and distribution) |
| Stage 2 | Value-added and Interactive Services: The growth stage, in which more advanced applications and interactive services are added, such as dual-mode handsets, FMC voice and video communication, and interactivity between IPTV and other devices. | 1. Personalization beyond low pricing 2. Innovative services to drive high revenue and high margins |
| Stage 3 | Lifestyle Services: The advanced stage, which includes service bundles for communication, information and entertainment, aimed at groups of users with similar interests and usage patterns. | 1. Use branding in line with the targeted lifestyle market 2. Provide custom user interfaces or custom-designed wireless devices 3. Link with complementary lifestyle elements such as: Websites, IPTV channels, radio stations, original content, games, books, films, merchandising, etc. |

1. **Market Trends of FMC Services**

Today's, competitive landscape, mobile cellular vendors will aggressively pursue fixed-line business with broadband wireless offerings (3G, mobile WiMAX, LTE). They will use femtocells or broadband routers to compete with traditional fixed-line voice services from cable and traditional telephone offerings. In some markets new wireless broadband additions now exceed traditional fixed broadband subscriber additions.

Fixed and cable operators will add mobile capabilities through MVNO arrangements, partnering, orspectrum acquisition. Disruptive new service providers will offer services supported by an advertising business model such as Google's. Integrated-service operators can pursue a first-mover advantage if they can integrate their fixed and (owned or rented) mobile business processes. Content mobile virtual network operators (MVNOs) will either need to partner or move to a portal-oriented strategy. Pre-paid MVNOs may need to consider adding additional prepaid services such as mobile broadband or content access.

For integrated-service operators, the major challenge is that consumers now have more choice in how they access content both in terms of technology and of pricing model. Over time, integrated-service operators have had to compete with terrestrial over-the-air broadcasters, satellite broadcasters, movie rental operations, and now Internet-based competition. (Wireless video downloads today appear to be primarily short clips and therefore a less direct form of competition).

1. **Potential FMC Advances Services and Applications**

Fixed-Mobile Convergence covers two main aspects: infrastructure and services**.** Infrastructure aspect deals with the capability of different network elements: switches, Intelligent Network (IN), or NGN, and Telecommunication Management Network (TMN) or Customer Care and Billing System (CC&BS) to support fixed or mobile applications. Services aspect is related to the different fixed-mobile convergence services that can be proposed to users (residential or professional subscribers).

From [AWG-14/OUT-04], some FMC common services approaches to be offered by operators are:

1. FMC bundles / Commercial convergence: fixed and mobile services are bundled together often as flat-rate packages with a single bill.
2. Service Convergence: some services can be accessed from the fixed and mobile subscriber (e.g. the use of single voice mailbox for both fixed and mobile subscriber, etc.)
3. Network-based FMC: uses intelligent converged platforms (e.g. NGN, IMS, Integrated Service Convergence Platforms, Multi Access Platforms, etc.) to route calls to the fixed or mobile phone as the customers choose.
4. FMC in terminal/device: combines cellular and Bluetooth/WLAN technologies in a handset. The device acts as a normal mobile phone until the user is within the range of a Bluetooth/WLAN base station when the calls are routed to them through the fixed line

Apart from those common approaches, the demand for voice services especially with PSTN-like tariff is not attractive any longer. It can be learned from the questionnaire and also other references that mobility life style had changed the way of communication. Voice based services is conducted in the mobile network, driven by the user’s mobile life style and cheap voice call packages offered by mobile operators. Fixed operators also shift their business to broadband with IPTV and other smart home applications. This trend causes PSTN tariff offerings of FMC services not attractive anymore.

On the other hand the network evolutions had already introduced Next Generation Network standardizations which enable the convergence in the network level. In the device layer, the rise of convergence devices such as smartphones, tablets and later on phone-tablets with smart connected home appliances, and smart TV their multimedia capabilities had driven the users to a new digital life style. Users like to have convergence in their connected devices and doesn’t attracted anymore with traditional services (voice services). Operators see these changes and grab it as opportunities to offer different FMC services which mainly in the area of convergence of fixed and mobile network data (wifi offloading and femtocell offloading). Other services such as FMC Video and streaming services and multi devices conference services are the potential FMC services. Other kind of advance FMC services could be in the area of smart and connected home like Home Automations, eHealth Applications, Transport/Telemetric and the Smart Grid.

1. **Future Requirements of Fixed Mobile Convergence**

One of the key requirements to enable the vision of fixed mobile convergence is for convergence of the infrastructure and the O&M systems. Where an operator may today provide customer with multiple services (like fixed line voice and fixed line data to the home/office, mobile voice and data, multimedia TV and cable, interactive gaming and content etc), the operator must maintain separate management and control mechanisms for each service. A customer will still have a separate SIM card for the mobile, smart card for the cable/satellite, and usually separate billing mechanisms for each service.

Nowadays there is a lot of interest in how to utilize the huge data capacity of existing cable television networks for providing a range of new services. In many countries there are two wired telecommunications infrastructures that reach people’s homes, namely the telephone networks and the cable television (CATV) networks. The telephone and cable companies have traditionally struck to different markets. The telephone and cable companies have traditionally stuck to different markets.

The former concentrated on telephony, data and other two-pay services, while the latter concentrate on broadcasting services, mainly radio and television related, with perhaps some limited data capabilities in some countries (for example, teletext). Now, however, because of the merging of computers and television, as well as new political developments regarding deregulation, new opportunities are opening up for the telecommunications companies as well as the cable TV operators to expand their services into each other’s traditional territories. As far as the link to the home (loyal loop) is concerned, both have invested a lot of time and money in wiring up entire communities, with twisted pair and coaxial cable respectively. Neither f them would want to make extensive changes to the local loop installations in place, at least not in the short term. Both would wish to keep the present installation in place, but adapt the ends of the cable connections to the requirements of new services. So, the telephone companies will try to increase the capacity of their star-configured network, which is already bidirectional. On the other hand, the cable TV companies have enough bandwidth; their problem is how to move from a broadcast-oriented system to a 2-way network that can easily interface to the rest of the world.

More and more often, at the market of mobile technology, we see a situation where technology is ahead of imagination. There is a wide range of technologies and tools, based on which you can generate a lot of ideas for successful mobile applications at the disposal of developers and designers. One of the promising areas of the market for mobile applications is an area of "smart home" system and Digital TV: SMART TV with IPTV. This topic is in trend for several years. Today the demand on development is still in trend of IPTV, set-top boxes for digital game pads and Android, iOS-application to control TV devices based on technology SMART TV. The software for the SMART TV and IPTV allows you to use smartphones and tablets as joysticks for gaming, for browsing in the Internet, program management, etc. Another popular trend: the development of applications for managing all electrics of "smart home" with a variety of mobile devices based on the operating systems Android and iOS. This trend claims that mobile applications integrating more and more into our lives and we need to have time to track all the new trends of the market.

1. **Conclusions**

In this study, drivers and motivations for current FMC services deployment can be described in form of regulations, market/customer, business and technology. Each stake holder of FCM services has their own drivers and motivations to deploy FMC services. Those drivers and motivation also depends on the country of the FMC implementation. Some country does not see any significant driver and motivation to start the deployment; while in a country with special conditions, FMC deployment is used as mean to fulfill the need of telecommunication services.

The success factors of FMC services implementation can be vary for each stake holders of FMC in each APT member. Supportive regulations, mature and cost effective technology, integration of devices, networks and applications and brand power of the offerings are the factors identified as the key success factors. While other way to suggest key success factors are by defining them in the implementation stages.

While mobile business is still a high growing market among the APT members, FMC services in form of voice telephony is no longer perceived as attractive services for business. The growing of other form of communications, high affordability and the price drop of mobile cellular services drives the substitution of fixed services by mobile services. In other hand, the mobility life style gives opportunity to develop other variety of FMC services. Some potential advance services such as connectivity device-to-device with smartphones and among home appliances and enterprise based services like unified communications can be developed as FMC solutions. Other FMC services for seamless experience in fixed and mobile broadband data convergence and convergence TV solutions are some of the potential FMC services to be offered. That kind of new advance FMC services are some advance services needs to be deeply study in the area of FMC.

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