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**APT SURVEY REPORT**

**on**

**FIXED MOBILE CONVERGENCE SERVICES**

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**APT SURVEY 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 detail groups of participants are as below:

* 1. Regulators: 4 institutions
	2. Operators: 4 institutions
	3. Vendors: 3 institutions
	4. Others: 0 institution

List of Institutions/Companies are as below:

1. Authority of Radio Frequency Management, MIC, Socialist Republic of Vietnam
2. State Radio Monitoring Center, MIIT, China
3. LG-Ericsson, Korea
4. LG-Uplus, Korea
5. LG Electronics, Korea
6. The Office of National Broadcasting and Telecommunication Commissions, Thailand
7. The Government Public Relations Department, Thailand
8. TOT Public Company Limited, Thailand
9. Ericsson (Thailand) Company Limited
10. Malaysian Communications and Multimedia Commission (MCMC)
11. PT. Telekomunikasi Indonesia, Tbk. (Telkom Indonesia)

This questionnaire report is divided into four target groups, which are regulators, operators, vendors, and other institutions.

1. **Institution/Company FMC deployment**
2. **Regulator**

From the questionnaire responded, some information can be gathered from the regulator institutions. The respons are described per country as follow.

In Thailand, currently there is no operator requesting FMC service and there are no special rules for FMC. But the licensing scheme in Thailand is technology neutral based for which the operator obtained the license covering both fixed and mobile communications can provide FMC service as long as it does not exceed the operator’s license scope.

In Vietnam, The Ministry of Information and Communications (MIC) allows the mobile operators to provide fixed telephone services. The MIC awards different licenses for mobile and fixed services with specified conditions. The motivation for this license is to support 2 (two) nationwide mobile operators, e.g. Vietnam Posts and Telecommunications Group (VNPT) and Viettel, to deploy fixed service on their mobile network infrastructure. This will help them to provide telecom services to some remote areas and rural areas where traditional fixed service cannot be implemented or ineffectively implemented.

The comparison between Vietnam’s FMC subscribers to fixed or mobile subscriber as per July 2012 is described as follow. There are 5.2 millions of FMC subscribers in Vietnam, this equivalent to 34% of fixed subscriber and 4.3% of mobile subscriber. Those subscribers are subscribed mainly for telephony (voice) service.

Meanwhile, in China, based on the questionnaire response, there is no specific FMC related regulations yet. There are some discussion regarding FMC technologies and FMC business aspects and also some small scale FMC trials conducted in China. But those activities were not providing adequate result on to motivate the implementation of FMC services in China nor give clear estimation of the future FMC service implementation. Before the year 2009, there was motivation to implement FMC services for the fixed telecommunication operators. But now all of them have acquired mobile telecommunication business licenses, therefore there is no much motivation any more to implement FMC services for these operators.

There are no accurate data of the amount of the FMC subscribers in China. Currently most of the FMC services are just package services option, such as one package month rate for mobile phone, fixed telephone and ADSL data services.

Malaysia adopted a convergence regulation model for the communication and multimedia industry. This regulatory framework is included in the Communications and Multimedia Act (CMA) 1998 which introduced a new licensing regime to better regulate the industry towards convergence and facilitate the changing needs of licensing and developmental aspects of the industry. These new regulations are developed based on the underlying principle that network operators should be regulated on a technology neutral basis.

The purpose of network convergence is to migrate today’s separate circuit switched and packet switched core networks to a unified core network that supports existing access technologies in both fixed and mobile domains. The solution must support the introduction of IP-centric multimedia services that can be delivered to a variety of terminals. It also must be cost effective and employ complementary access technologies.

Malaysia motivations to implement FMC Services are stated as follow:

1. FMC leads to a conflict free ICT environments
2. Enhance rollout and growth of new communication technologies
3. Simplifies the licensing procedures
4. Ensure flexibility and efficient utilization of spectrum

While the composition of FMC Service subscribers is shown in Figure 1.



**Figure-1 FMC subscribers are currently subscribed to FMC services in Malaysia and the proportion compared to fixed or mobile subscriber**

The kind of FMC services mainly offered or planned to be offered in Malaysia is:

1. VoIP
2. Fixed and Wireless Broadband
3. WiMAX
4. UMTS/HSPA

In terms of regulation, Communications and Multimedia Act 1998, paved way for convergence by introducing a technology and service-neutral licensing regime for telecom and broadcasting, which have reduced the service specific licenses to four generic categories of licenses:

1. Network Facility Provider (NFP)
2. Network Service Provider (NSP)
3. Application Service Provider (ASP)
4. Content Application Provider

From the questionnaire responses from the regulator perspective, it can be identified that not all of the country already implement regulation related the FMC service. Thailand and China do not have special regulation concerning FMC services. While the licensing scheme in Malaysia is based on a technology neutral framework, which can support the convergence of industry in this country. There is a specific FMC service related regulation in Vietnam which enables operators to provide fixed telephone services using their mobile network for rural area.

1. **Operator**

Operators in Thailandhavenot launched FMC services yet. But there is a plan to launch fixed and mobile news services via broadband data. Thailand operators identify their motivations to offer FMC services are mainly to expand our customer. Due to that no FMC services had launched yet, operators in Thailand have no exact number and proportion of FMC subscribers compared to fixed or mobile customer. Those operators’ perspective on the success factors for FMC services deployment is when the number of viewer will increase significantly that means Thailand operators can delivery their contents to all platforms device, complete integration of services for mobile and fixed device as well.

Operators in China could have possibility to launch FMC services in near future if the technology is mature enough. Motivation of companies to offer FMC services is driven by means to provide high quality connection and coordination between mobile network and WLAN, which are already deployed, as the terminals are becoming various at present. In this case, operators could provide excellent experience to users. China operators feel that it is important for operators to guarantee the service QoS in future. However, they feel that the technology is still pre-mature and not sure whether vendors’ especially terminal vendors could support it well.

While a Korea operator, LG Uplus, already launch a FMC service named ‘Smart 070’, which is an internet telephony service for smart phone users. They are provided with free calling services with other Fixed and Mobile 070 users and relatively inexpensive charging rate. Korea institution/company’s motivations to offers FMC services, There were user demands to use 070 internet telephony services using their smart phone. It could be helpful for customer satisfaction to meet these user demands. Korea has 18,000 smart 070 users. It accounts for only 0.6% of the whole 070 internet telephony subscribers. LG Uplus perspective on the key success factor of FMC services are mainly in the market demands and appropriate regulations.

Telkom Indonesia is doesn’t have any FMC services launched to the market yet. Telkom plans to introduce convergence services in term of broadband and streaming TV services. Broadband convergence services will be introduced by offering single sign on for a subscriber to access Fixed Broadband (ADSL), mobile broadband (3G) and Wifi networks. The services will be offered this year (2012) in term of single sign on of fixed broadband subscriber to wifi network and single sign on of mobile broadband (3G) subscriber to wifi network (3G offload). The program is named Indonesia Wifi ([www.indonesiawifi.com](http://www.indonesiawifi.com)). Streaming TV services will be introduced later by introducing streaming TV services (including Video on Demand services) to all Telkom’s broadband subscriber. The service is named UseeTV ([www.useetv.com](http://www.useetv.com)). Telkom company’s motivations to offers FMC services, Telkom introduce convergence broadband services to gain more broadband subscribers in broadband business and as a smart pipe strategy to support other business in IT services, Media and Edutainment. Telkom sees that success factor for FMC services should be the integration of Devices Networks and Applications.

As we can learn from the operators perspective on the FMC services, some operators have not consider to launch a specific FMC services, due to the high uncertainty in market, technology and regulations (e.g. operators in Thailand and China). While there also operator that already a specific FMC services, such as LG Uplus in Korea. Other operator choose to offer different kind of FMC services, which are fixed and mobile broadband convergence services and convergent streaming TV services, just like Telkom Indonesia.

1. **Vendor**

Ericsson Thailand sees that everything is going mobile. This evolution is driven by video, cloud-based services, the internet and machine-to-machine (M2M) connectivity. It changes how people behave and how they leverage mobility to communicate and to improve their daily lives, through new and existing services. Users now demand connectivity anywhere and anytime. Important driving forces include new affordable smartphones, and the many new connected devices on the market. The total number of mobile subscriptions globally (excluding M2M) will reach around 9 billion in 2017, of which 5 billion will be for mobile broadband. With an increased number of subscriptions, evolved devices and 24/7 connectivity to use them, they expect this industry will a growing industry. In Ericsson Thailand perspective, being scalable, smart, simple, and by offering superior performance, any networks provider will meet future demands related to mobile broadband, video traffic and the cloud. 4th-generation networks will also help enable operators to monetize broadband by differentiating video and cloud over-the-top traffic and services to consumer and enterprise customers. The increasing traffic will be managed by new packet-based backhaul and transport solutions.

Another perspective comes from LG Electronics, Korea, which sees the FMC solutions in smart devices and equipment, providing more convenient services at FMC environment, such as access and monitors the operational status of the equipment through the use of smart devices on the go, etc. With a view to help the people who stay at home to be more efficient around the home, while also overseeing the environment. Services offered are simple and easy for customers with different types of smart devices, namely smartphones, tablets, smart TVs, some household appliances, etc. With increasing technology useful, efficient and its content in terms of customer-centric scenarios, this will ensure that the customer track the progress of their orders remotely operations for home appliance just by pressing a single button on the smartphone application.

Different view also came from LG-Ericsson, Korea, which have FMC solution offerings of IP-PBX, Key Phone System, Unified Communication solution, and WiFi. Its motivation to provide FMC solutions is to increase Enterprise communication market share. The common FMC solution provided to the customer is total solution for enterprise (presence, directory look-up, messaging service, etc.). LG-Ericsson also shares its perspective on the success factors regarding FMC solutions deployment which are brand power and cost efficiency.

As we can learn from the vendors perspectives, the connected world and life style still a good opportunity in offering FMC solutions. They expect to have many opportunities not only from common telephony services for consumer market, also other advanced services such as video, cloud-based services, internet connectivity and machine to machine (M2M) system. Enterprise based solutions by means of providing IP-PBX, Key Phone System, Unified Communication solutions, and WiFi could also be enterprise FMC service option.

1. **Market and Competitive Landscape Related to FMC Services**

Some information related to the market and competitive landscape of FMC services can be extracted from the questionnaire report. The information is described per country basis in the next paragraphs as follow.

In Thailand the penetration rate of mobile service is around 114% of population at the end of year 2011. It can be said that almost everyone in the country has mobile phone and almost everyone contact each other via mobile phone. Therefore, it may be difficult for FMC service to gain much market share considering the behavior of Thailand people nowadays. And the market issues all new campaign to supporting advance services, notice that most operators or vendors try to offer all in one packet.

Thailand opinion or perspective of the market and competitive landscape in Thailand indicates that there are trends that people need to get connected either in the office, at home, or on the go with the same means they usually have and on the same device they normally use. FMC could play a vital role in providing such services to customers. Cellular customers have experienced some difficulty in getting signal coverage indoor, where they could use a “FMC-like” service to get a hold on their existing numbers, no need to switch or forward any incoming call to another service. To extend coverage of cellular signal through indoor could cost Mobile operators a lot without the utilization of FMC technology. Then MVNO model could be valid in certain market and in some sense, it could support the development of new advance services.

Other opinion or perspective of FMC market is provided by Vietnam, which emphasis that FMC Services will help to provide telecom services to some remote areas and rural areas where traditional fixed service can’t be implemented or ineffectively implemented. In Vietnam cases, the FMC service were based on mobile network infrastructure in order to provide conventional voice service for remote areas or rural areas. So far, it doesn’t support the development of new advance services. But with the blooming of mobile subscription, number of fixed and FMC service subscribers is going down.

In China, the wireless market will become more and more important in future and operators should pay more attention on it. But China is not sure whether FMC new advance service is needed or not, and it depends on the user’s requirements and trends of the market.

Meanwhile, in Korea, LTE is a factor of crucial competitive landscape in the market of mobile communication systems. With the deployment of LTE, variety of FMC services will be accelerated. A major study topic is the use of Wi-Fi technology and smart devices in the market regarding FMC services. Recently advanced new services have been introduced by using a smart phone with Wi-Fi access.

Indonesia Telecommunication Industry is a very competitive yet still a fast growing market. There are 10 operators serving more than 237 Million populations, which approximately 56% of them are young dynamic population. Cellular service has the highest penetration over the population, which is 105%, while fixed wireline services only 4% over population and keep declining. Other services i.e. Broadband still have 4.8% of penetration over population but keep growing. Consumer markets more attracted to specific content and application services such as social networking and games.

The competitive landscape and market preference on non-voice services give strong influence in the development of new services including FMC services. Indonesia market trends rely on the development of cellular market and broadband market. This trend will be targeted as the basis of new convergence service development. Convergence in the contents and applications between fixed and mobile will be the advance services of FMC.

1. **View of Advanced FMC Services**

Services and applications and solutions that can be offered in FMC Thailand is cheaper calling charge and about FMC Video Services will offer Video portal providing value-added content with individual pricing per service. Thailand operator’s views of the possible technology to deliver FMC advance services are 3G and 4G technologies and potentially Wi-Fi and IP network. The potential FMC advanced services bundle for the market might include PC client and cellular phone. Fixed line operators could open new era of seamless communications to their customers while they are office (station) or mobile warriors. They could be reached by one means of communications (i.e. one number for office or on the go).

There is not much information shared by regulator for China on the next advance service of FMC. It only indicates that the advanced services, applications and solutions offered for FMC could supported by LTE-A, and 802.11 technologies.

While in Korea, the industry perspective consider connectivity device-to-device with smartphones and among home appliances can enable sophisticated FMC services. For example, through smart meters in homes, energy usage data will be collected throughout the house. In addition, efficient manner through overall energy consumption can be reduced will be recommended to the customer. In some household appliances must be integrated with IT technology as a reasonable scenario and valuable. And the expected Connected Home / Home Automation, eHealth, Transportation / Telemetics, and the Smart Grid could be a candidate.

FMC services offered by Telkom in the broadband connectivity and streaming video can be offered as advanced services for FMC. FMC services in broadband connectivity and video streaming can be offered as advanced services for FMC. To deliver FMC in broadband and video streaming as advance FMC services, Wi-Fi can be a quick and affordable access network technology, and Service Delivery Platform as convergence platform to orchestrate some application and media servers. Other advance technologies such as Femtocells can be implemented together with Wifi in order to gain maximum benefits from both technologies. FMC advanced services (broadband and video streaming) have potential market starting from cellular subscriber as main target and also broadband subscriber with Wi-Fi access. The FMC services can be also positioned as sweetener to gain more broadband and cellular subscribers.

1. **Future Requirements of FMC Services**

Thailand institution or company roadmap of FMC services and applications deployment is none at the moment and for Thailand institution or company vision of next FMC evolutions for services and applications, none at the moment too. Thailand plan to deploy News data center which support most applications aspect, thus our viewer could access and share media with seamless. And Not only flexible using in country but also reasonable cost on broad for Thailand institution/company vision of next FMC evolutions for services and applications.

China institution/company roadmap of FMC services and applications deployment is not determined. China institution/company vision of next FMC evolutions for services and applications is currently, mainly focus on the coordination between 3GPP and WLAN technology, future vision is not determined.

In Korea, the next company's vision for the evolution of FMC services and applications is a smart tool development direction in the pursuit of technological advancements that will make consumers' lives more convenient and ultimately improve their quality of life. Device to device connectivity with smartphones and among the appliances are new and exciting ways for us to achieve this goal.

Current roadmap for FMC services is broadband connectivity and video/multimedia streaming for fixed and mobile subscriber of Telkom Group (fixed and mobile subscribers). Telkom’s visions of convergence can be described as triple play and triple screen services, which is a services that bundled the voice, data and video services, that can be experienced by the customer in TV screen, Mobile Phone screen and PC/Laptop/Tablet screens (Fixed and mobile kind of services).

There was no information gathered from the questionnaire responses from Vietnam and Malaysia regarding institution/company vision of next FMC evolutions for services and applications.

1. **Conclusions**

Considering the feedback from APT members regarding the FMC Services questioner, it can be notice that Fixed Mobile Convergence Services are no longer perceived or planned as voice only services. The FMC services had developed towards more open services which include data services and multimedia services. New emerging technologies arise not only in the network but also in customer devices and appliances.

Furthermore, the FMC still need to face some challenges not only from technical aspects but also regulation and policy aspects. Some countries have not yet implement FMC regulations. Further study on FMC is needed and can be specify more on some topics related FMC such Fixed and Mobile Broadband Convergence. This questionnaire result could also be a reference to the new FMC Services report.

**References**

|  |  |  |
| --- | --- | --- |
| [AWG-12/OUT-15] | : | Questionnaire on Fixed Mobile Convergence Services |
| [AWG-13/INP-23] | : | Vietnam (S. R. of), “Response to the Questionnaire on Fixed Mobile Convergence” |
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| [AWG-13/INP-119] | : | Malaysia, “Response to the Questionnaire on Fixed Mobile Convergence”  |
| [AWG-13/INP-123] | : | PT Telkom Indonesia, “Response to the Questionnaire on Fixed Mobile Convergence Services” |

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**APPENDIX**

**RESPONSES ON THE QUESTIONNAIRE OF FIXED MOBILE CONVERGENCE SERVICES**

1. **Institution/Company FMC deployment**
2. **Questions for Regulator**
3. Does your country already have FMC related regulations? If yes please describe the framework and its related impacts on your country’s industries landscape. If no, please share your preference or plans regarding FMC implementation in your country.

|  |  |  |
| --- | --- | --- |
| No. | Country | Answer |
| 1 | Vietnam (S. R. of) | In Vietnam, the Ministry of Information and Communications (MIC) allows the mobile operators to provide fixed telephone services. The MIC awards different licenses for mobile and fix services with specified conditions. |
| 2 | China (P.R. of) | Our country doesn’t have specific FMC related regulations yet. There are some discussion regarding FMC technology and business aspects and also some small scale trials. We are not able to make a clear estimation regarding FMC implementation in our county currently. |
| 3 | Thailand | At present there is no operator applying for FMC service and there is no specific regulation for FMC. However the licensing scheme in Thailand is technology neutral based for which the operator obtained the license covering both fixed and mobile communications can provide FMC service as long as it does not exceed the operator’s license scope.No, at present the regulatory body has no activity or plan to encourage FMC deployment.  |
| 4 | Malaysia | In 1998, Malaysia adopted a convergence regulation model for the communication and multimedia industry. This regulatory framework encompassed in the Communications and Multimedia Act (CMA) 1998, introduces a new licensing regime to better regulate the industry towards convergence and facilitate the changing needs of licensing and developmental aspects of the industry. These new regulations are developed based on the underlying principle that network operators should be regulated on a technology neutral basis. The purpose of network convergence is to migrate today’s separate circuit switched and packet switched core networks to a unified core network that supports existing access technologies in both fixed and mobile domains. The solution must support the introduction of IP-centric multimedia services that can be delivered to a variety of terminals. It also must be cost effective and employ complementary access technologies.  |

1. Please share and describe your country motivations to implement FMC Services.

|  |  |  |
| --- | --- | --- |
| No. | Country | Answer |
| 1 | Vietnam (S. R. of) | Two nationwide mobile operators, VNPT and Viettel, have deployed fixed service on their mobile network infrastructure. This help to provide telecom services to some remote areas and rural areas where traditional fixed service cannot be implemented or ineffectively implemented. |
| 2 | China (P.R. of) | Before 2009, there was motivation to implement FMC services for the fixed telecommunication operators. But now all of them have acquired mobile telecommunication business licences. And there is no much motivation any more to implement FMC services for these operators currently. |
| 3 | Malaysia | 1. FMC leads to a conflict free ICT environments
2. Enhance rollout and growth of new communication technologies
3. Simplifies the licensing procedures
4. Ensure flexibility and efficient utilization of spectrum
 |

1. How many FMC subscribers are currently subscribed to FMC services in your country and how much is the proportion compared to your fixed or mobile subscriber?

|  |  |  |
| --- | --- | --- |
| No. | Country | Answer |
| 1 | Vietnam (S. R. of) | As of July 2012, there are 5.2 millions of FMC subscriber in Vietnam, equivalent to 34% of fixed subscriber and 4.3% of mobile subscriber. |
| 2 | China (P.R. of) | We don’t have the accurate data of the amount of the FMC services subscriber in our country. But that is clear that the amount of FMC services subscriber is a tiny part compared to fixed or mobile subscriber. |
| 3 | Malaysia |  |

1. What kind of FMC services mainly offered or planed to be offered in your country?

|  |  |  |
| --- | --- | --- |
| No. | Country | Answer |
| 1 | Vietnam (S. R. of) | Telephone (voice) service. |
| 2 | China (P.R. of) | Currently most of the FMC services are just package services option, such as one package month rate for mobile phone, fixed telephone and ADSL data services. |
| 4 | Malaysia | 1. VoIP
2. Fixed and Wireless Broadband
3. WiMAX
4. UMTS/HSPA
 |

1. Please share in brief your institution/company perspective on the success factors regarding FMC service deployment (in term of technology, markets, competitions, regulations, and the impacts on industry).

|  |  |  |
| --- | --- | --- |
| No. | Country | Answer |
| 1 | Vietnam (S. R. of) | N/A |
| 2 | China (P.R. of) | N/A |
| 4 | Malaysia | In terms of regulation, Communications and Multimedia Act 1998, paved way for convergence by introducing a technology and service-neutral licensing regime for telecom and broadcasting, which have reduced the service specific licenses to four generic categories of licenses:1. Network Facility Provider (NFP)
2. Network Service Provider (NSP)
3. Application Service Provider (ASP)
4. Content Application Provider

Thus, have eased the licensing procedure and boost the rollout and growth of new technologies.  |

1. **Questions for Operators**
2. Does your institution/company already launch FMC services? If yes please describe your service offerings. If no, does your institution/company have plan to launch FMC services? Please describe.

|  |  |  |
| --- | --- | --- |
| No. | Institution | Answer |
| 1 | CMCC  | Not yet, and our company may have a plan to launch this kind of service in near future if technology is mature enough. |
| 2 | LG Uplus | We have a FMC service named ‘Smart 070’, which is an internet telephony service for smart phone users. They are provided with free calling services with other Fixed and Mobile 070 users and relatively inexpensive charging rate. |
| 3 | The Government Public Relations Department | No, But we plan to launch fix and mobile news services via data broadband |
| 4 | TOT Public Company Limited  | No, We haven’t had any FMC service offerings at the moment. We have been examining the FMC service for our 3G and Fixed line subscribers. |
| 5 | PT Telekomunikasi Indonesia, Tbk. | Currently Telkom doesn’t have any FMC services launched to the market. Telkom plans to introduce convergence services in term of broadband and streaming TV services. Broadband convergence services will be introduced by offering single sign on (SSO) for a subscriber to access Fixed Broadband (ADSL), mobile broadband (3G) and Wifi networks. The services will be offered this year (2012) in term of single sign on of fixed broadband subscriber to wifi network and single sign on of mobile broadband (3G) subscriber to wifi network (3G offload). The program is named Indonesia Wifi (www.indonesiawifi.com)Streaming TV services will be introduced later by introducing streaming TV services (including Video on Demand services) to all Telkom’s broadband subscriber. The service is named UseeTV (www.useetv.com). |

1. Please describe your institution/company’s motivations to offers FMC services.

|  |  |  |
| --- | --- | --- |
| No. | Institution | Answer |
| 1 | CMCC  | Since we have deployed both mobile network and WLAN, and the terminals are becoming various at present, we consider it is better to establish the connection and coordination between different networks. In this case, operators could provide excellent experience to users. |
| 2 | LG Uplus | There were user demands to use 070 internet telephony service using their smart phone. It could be helpful for customer satisfaction to meet these user demands. |
| 3 | The Government Public Relations Department | To expand our customer and promote news awareness |
| 4 | TOT Public Company Limited | To introduce new service to our customers to reduce churn. |
| 5 | PT Telekomunikasi Indonesia, Tbk. | Telkom introduce convergence broadband services to gain more broadband subscribers in broadband business and as a smart pipe strategy to support other business in IT services, Media and Edutainment. |

1. How many FMC subscribers are currently subscribed to your FMC services and how much is the proportion compared to your fixed or mobile subscriber?

|  |  |  |
| --- | --- | --- |
| No. | Institution | Answer |
| 1 | CMCC  | None at the moment. |
| 2 | LG Uplus | We have 18,000 smart 070 users. It accounts for only 0.6% of the whole 070 internet telephony subscribers. |
| 3 | The Government Public Relations Department | No services yet |
| 4 | TOT Public Company Limited | none as mentioned above that the FMC is being examined. |
| 5 | PT Telekomunikasi Indonesia, Tbk. | Currently Telkom have no FMC subscriber |

1. Please share in brief your institution/company perspective on the success factors regarding FMC service deployment (in term of technology, markets, competitors, regulators, vendors, and third parties).

|  |  |  |
| --- | --- | --- |
| No. | Institution | Answer |
| 1 | CMCC  | We consider the feature is important for operators to guarantee the service QoS in future. However, the technology is still pre-mature, and not sure whether vendors especially terminal vendorcould support it well |
| 2 | LG Uplus | Market demands and appropriate regulations are the most important factors to bring about technology and service innovation. |
| 3 | The Government Public Relations Department | The number of viewer will increase significantly that means we can delivery our contents to all platforms device, complete integration of services for mobile and fixed device as well |
| 4 | TOT Public Company Limited  | None |
| 5 | PT Telekomunikasi Indonesia, Tbk. | Telkom sees that success factor for FMC services should be the integration of Devices Networks and Applications. |

1. **Questions for Vendors**
2. Does your institution/company have FMC solutions to offer? If yes please describe your main solution. If no, does your institution/company have planned to develop FMC solution? Please describe.

|  |  |  |
| --- | --- | --- |
| No. | Institution | Answer |
| 1 | LG-Ericsson | Yes, IP-PBX, Key Phone System, Unified Communication solution, WiFi |
| 2 | LG Electronics | We have investigated FMC solutions based on smart devices and appliances, and we plan to provide more comfortable and convenient services in the FMC environments, e.g. access and monitor the operational status of appliances through the use of smart devices anywhere, etc. |
| 3 | Ericsson (Thailand) Ltd. | Everything is going mobile. This evolution is driven by video, cloud-based services, the internet and machine-to-machine (M2M) connectivity. It changes how people behave and how theyleverage mobility to communicate and to improve their daily lives, through new and existing services. Users now demand connectivity anywhere and anytime.Important driving forces include new affordable smartphones, and the many new connected devices on the market. The total number of mobile subscriptions globally (excluding M2M) will reach around 9 billion in 2017, of which 5 billion will be for mobile broadband. With an increased number of subscriptions, evolved devices and 24/7 connectivity to use them, we expectPlease also visit our solution information at:http://www.ericsson.com/ourportfolio/products<http://www.ericsson.com/yourbusiness/telecom_operators/fixed-broadband-convergence> |

1. Please describe your institution/company’s motivations to provide FMC solutions.

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| No. | Institution | Answer |
| 1 | LG-Ericsson | To increase Enterprise communication market share |
| 2 | LG Electronics | We intend to assist stay-at-home persons to be more efficient around the house, while keeping an eye on the environment as well. |
| 3 | Ericsson (Thailand) Ltd. | We, Ericsson, are leading the evolution toward the 4th generation of IP networks that will help enable the Networked Society and a world of more than 50 billion connected devices by 2020. By being scalable, smart, simple, and by offering superior performance, these networks will meet future demands related to mobile broadband, video traffic and the cloud.4th-generation networks will also help enable operators to monetize broadband by differentiating video and cloud over-the-top traffic and services to consumer and enterprise customers. The increasing traffic will be managed by new packet-based backhaul and transport solutions. |

1. What type of common FMC services that your solution provides to your customer?

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| No. | Institution | Answer |
| 1 | LG-Ericsson | Total solution for Enterprise (Presence, Directory Loop-up, Messaging Service, etc) |
| 2 | LG Electronics | We will provide simple and easy services to our customer with the various types of smart devices, i.e. smart phone or tablet, smart TV, and several home appliances, etc. |
| 3 | Ericsson (Thailand) Ltd. | Please refer to question no 1.*From question no. 1:**Everything is going mobile. This evolution is driven by video, cloud-based services, the internet and machine-to-machine (M2M) connectivity. It changes how people behave and how they**leverage mobility to communicate and to improve their daily lives, through new and existing services. Users now demand connectivity anywhere and anytime.**Important driving forces include new affordable smartphones, and the many new connected devices on the market. The total number of mobile subscriptions globally (excluding M2M) will reach around 9 billion in 2017, of which 5 billion will be for mobile broadband. With an increased number of subscriptions, evolved devices and 24/7 connectivity to use them, we expect**Please also visit our solution information at:**http://www.ericsson.com/ourportfolio/products*[*http://www.ericsson.com/yourbusiness/telecom\_operators/fixed-broadband-convergence*](http://www.ericsson.com/yourbusiness/telecom_operators/fixed-broadband-convergence) |

1. Please share in brief your institution/company perspective on the success factors regarding your FMC solutions deployment in Asia Pacific region (in term of technology, markets, competitions, regulators, vendors, and third parties).

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| No. | Institution | Answer |
| 1 | LG-Ericsson | Brand power, Cost efficiency |
| 2 | LG Electronics | We try to improve the useful and efficient technologies and contents in terms of the customer-centric scenarios. It makes sure that customers keep track of the progress of their remotely ordered operation to a home appliance by pressing just one button on a smart phone app.  |
| 3 | Ericsson (Thailand) Ltd. | With global mobile broadband subscriptions expected to reach 5 billion by 2015, operators have an opportunity to deliver applications that enhance the user experience and increase business as we move into the Networked Society. Our ability to help operators to improve their customers’ user experiences |

1. **Questions for Others**
2. Does your institution/company have any activities related to FMC deployment? If yes please describe them. If no, please share your institution/company views and opinions of FMC deployment?

*Not answered*

1. Please describe your institution/company’s opinions regarding the main motivation of FMC services deployment.

*Not answered*

1. Please describe in brief your institution/company opinion of success factors on FMC service deployment in Asia Pacific region (in term of technology, markets, competitions, regulators, vendors, and third parties).

*Not answered*

1. **Market and Competitive Landscape Related to FMC Services**
2. Please share your opinion or perspective the market and competitive landscape in your country or selected region in Asia Pacific related to the deployment of FMC services.

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| No. | Institutions | Answer |
| 1 | Authority of Radio Frequency Management - Vietnam (S. R. of) | FMC help to provide telecom services to some remote areas and rural areas where traditional fixed service can not be implemented or ineffectively implemented.  |
| 2 | Radio Monitoring Center, MIIT - China (P.R. of) | this market will become more and more important in future and operators should pay more attention on it. |
| 3 | LG Electronics – Rep. Korea | In Korea, LTE is a factor of the important competitive landscapes in the mobile communication system market. With the spread of LTE, the various FMC services have been accelerated. |
| 4 | The Office of National Broadcasting and Telecommunication Commissions – Thailand | In Thailand the penetration rate of mobile service is around 114% of population at the end of year 2011. It can be said that almost everyone in the country has mobile phone and almost everyone contact each other via mobile phone. Therefore, it may be difficult for FMC service to gain much market share considering the behaviour of Thai people nowadays.  |
| 5 | The Government Public Relations Department – Thailand | The main reason is changing of customer behavior compels the market deployment. |
| 6 | TOT Public Company Limited  | There are trends that people need to get connected either in the office, at home, or on the go with the same means they usually have and on the same device they normally use. FMC could play a vital role in providing such services to customers. Cellular customers have experienced some difficulty in getting signal coverage indoor, where they could use a “FMC-like” service to get a hold on their existing numbers, no need to switch or forward any incoming call to another service. To extend coverage of cellular signal through indoor could cost Mobile operators a lot without the utilization of FMC technology. Then MVNO model could be valid in certain market. |
| 7 | PT Telekomunikasi Indonesia, Tbk. | Indonesia Telecommunication Industry is a very competitive yet still a fast growing market. There are 10 operators serving more than 237 Million populations, which approximately 56% of them are young dynamic population. Cellular service has the highest penetration over the population, which is 105%, while fixed wireline services only 4% over population and keep declining. Other services i.e. Broadband still have 4.8% of penetration over population but keep growing. Consumer markets more attracted to specific content and application services such as social networking and games. The competitive landscape and market preference on non-voice services give strong influence in the development of new services including FMC services. |

1. Please share your opinion of trends of the market regarding the FMC services, is it supporting the development of new advance services or not?

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| No. | Institutions | Answer |
| 1 | Authority of Radio Frequency Management - Vietnam (S. R. of) | FMC service base on mobile network infrastructure to provide conventional voice service to remote areas or rural areas. So far, it doesn’t support the development of new advance services. With the blooming of mobile subscription, number of fixed and FMC service subscribers is going down.  |
| 2 | Radio Monitoring Center, MIIT - China (P.R. of) | not sure whether new advance service is needed or not, and it depends on the user’s requirements. |
| 3 | LG Electronics -Korea | A big topic is to use Wi-Fi technology and smart devices in the market regarding the FMC services. Recently the new advance services have been introduced by using smart phones with Wi-Fi access. |
| 4 | The Government Public Relations Department - Thailand | Yes, the market issues all new campaign to supporting advance services, notice that most operators or vendors try to offer all in one packet. |
| 5 | TOT Public Company Limited  | In some sense, it is supporting the development of new advance services. |
| 6 | PT Telekomunikasi Indonesia, Tbk. | Indonesia market trends rely on the development of cellular market and broadband market. This trend will be targeted as the basis of new convergence service development. Convergence in the contents and applications between fixed and mobile will be the advance services of FMC. |

1. **View of Advanced FMC Services**
2. Is there any advanced services and applications and solutions that can be offered in FMC? Please share your institution/company views and describe those services and applications.

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| No. | Institutions | Answer |
| 1 | Authority of Radio Frequency Management - Vietnam (S. R. of) | N/A |
| 2 | Radio Monitoring Center, MIIT - China (P.R. of) | Not sure. |
| 3 | LG Electronics | Device-to-device connectivity with smart phones and among home appliances can activate the advanced FMC services. For example, through a smart meter at home, energy usage data throughout a home would be collected. In addition, the efficient way through which overall energy consumption can be reduced would be suggested to the customer. |
| 4 | The Government Public Relations Department - Thailand | Yes, FMC Video Services will offer Video portal providing value-added content with individual pricing per service |
| 5 | TOT Public Company Limited  | cheaper calling charge. |
| 6 | PT Telekomunikasi Indonesia, Tbk. | FMC services in broadband connectivity and video streaming can be offered as advanced services for FMC. |

1. Please share your institution/company views the possible technology to deliver FMC advance services.

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| No. | Institutions | Answer |
| 1 | Authority of Radio Frequency Management - Vietnam (S. R. of) | N/A |
| 2 | Radio Monitoring Center, MIIT -China (P.R. of) | In our understanding, LTE-A, 802.11 ac/ad, etc. could be the candidates. |
| 3 | LG Electronics - Korea | The several home appliances have to be integrated with IT technologies as reasonable and valuable scenarios. |
| 4 | The Government Public Relations Department - Thailand | 3G and 4G |
| 5 | TOT Public Company Limited  | potentially Wi-Fi, 3G wireless and PSTN/IP because our company has been strong in the fixed market for years |
| 6 | PT Telekomunikasi Indonesia, Tbk. | To deliver FMC in broadband and video streaming as advance FMC services, Wi-Fi can be a quick and affordable access network technology, and Service Delivery Platform as convergence platform to orchestrate some application and media servers. Other advance technologies such as Femtocells can be implemented together with Wifi in order to gain maximum benefits from both technologies. |

1. Please describe the potential market for the FMC advanced services in your country or in Asia Pacific region (please answer for at least one area).

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| No. | Institutions | Answer |
| 1 | Authority of Radio Frequency Management - Vietnam (S. R. of) | N/A |
| 2 | Radio Monitoring Center, MIIT -China (P.R. of) | Not sure |
| 3 | LG Electronics - Korea | The several home appliances have to be integrated with IT technologies as reasonable and valuable scenarios. |
| 4 | The Government Public Relations Department - Thailand | Service bundle including PC client and cellular phone. |
| 5 | TOT Public Company Limited  | potentially Wi-Fi, 3G wireless and PSTN/IP because our company has been strong in the fixed market for years |
| 6 | PT Telekomunikasi Indonesia, Tbk. | FMC advanced services (broadband and video streaming) have potential market starting from cellular subscriber as main target and also broadband subscriber with Wi-Fi access. The FMC services can be also positioned as sweetener to gain more broadband and cellular subscribers. |

1. **Future Requirements of FMC Services**
2. Please briefly describe your institution/company roadmap of FMC services and applications deployment.

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| No. | Institutions | Answer |
| 1 | Authority of Radio Frequency Management - Vietnam (S. R. of) | N/A |
| 2 | Radio Monitoring Center, MIIT - China (P.R. of) | Not determined. |
| 3 | The Government Public Relations Department - Thailand | We plan to deploy News data center which support most applications aspect, thus our viewer could access and share media with seamless. |
| 4 | TOT Public Company Limited  | none at the moment |
| 5 | PT Telekomunikasi Indonesia, Tbk. | Current roadmap for FMC services is broadband connectivity and video/multimedia streaming for fixed and mobile subscriber of Telkom Group (fixed and mobile subscribers).  |

1. Please share your institution/company vision of next FMC evolutions for services and applications.

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| No. | Institutions | Answer |
| 1 | Authority of Radio Frequency Management - Vietnam (S. R. of) | N/A |
| 2 | Radio Monitoring Center, MIIT - China (P.R. of) | Currently, mainly focus on the coordination between 3GPP and WLAN technology, future vision is not determined. |
| 3 | LG Electronics – Korea | Our direction in smart appliance development has been in pursuing technological advancements that will make consumers’ lives more convenient and ultimately upgrade their quality of life. Device-to-device connectivity with smart phones and among home appliances is a new and exciting way for us to realize this goal. |
| 4 | The Government Public Relations Department - Thailand | Not only flexible using in country but also reasonable cost on broad. |
| 5 | TOT Public Company Limited  | none at the moment |
| 6 | PT Telekomunikasi Indonesia, Tbk. | Telkom’s visions of convergence can be described as triple play and triple screen services, which is a services that bundled the voice, data and video services, that can be experienced by the customer in TV screen, Mobile Phone screen and PC/Laptop/Tablet screens (Fixed and mobile kind of services). |