وثيقة طلب مرئيات العموم

حول

السياسات التنظيمية
لمنح تراخيص تقديم خدمات الاتصالات الثابتة والمتنقلة
في المملكة العربية السعودية

صادرة عن هيئة الاتصالات وتقنية المعلومات

الرياض، في ١٤٢٧/٤/١٥هـ الموافق ٢٠٠٦/٥/١٣م

المحتويات

وثيقة طلب مرئيات العموم
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١   مقدمة

١/١   تختص هيئة الاتصالات وتقنية المعلومات ("الهيئة")بتنظيم قطاع الاتصالات وتقنية المعلومات فـي المملكة العربية السعودية ("المملكة")، وذلك بموجب نظام (قانون) الاتـصالات ("النظـام") الـصادر بالمرسوم الملكي رقم م/١٢ وتاريخ ١٤٢٢/٣/١٢هــ (الموافـق ٢٠٠١/٦/٤م)، ولائحتـه التنفيذيـة ("اللائحة") وتنظيم الهيئة ("التنظيم") الصادر بقرار مجلس الوزراء رقم ٧٤ وتاريخ ١٤٢٢/٣/٥هــ (الموافق ٢٠٠١/٥/٢٨م)، والمعدل بقرار مجلس الوزراء رقــم ١٣٣ وتـاريخ ١٤٢٤/٥/٢١هـــ. ويضع نظام الاتصالات الأساس القانوني لتطوير هذا القطاع وتنظيمه، فيما أنـشئت الهيئـة بموجب التنظيم الذي يحدد وظائفها وطرق إدارتها ومصادر تمويلها. أما اللائحة والتي بدأ العمـل بهـا فـور صدورها في يوليو من العام ٢٠٠٢م، فتتولى تنظيم قطاع الاتصالات وتقنية المعلومات في المملكة.

٢/١   وفقاً لأهداف الهيئة، المتمثلة في تعزيز تحرير قطاع الاتصالات وتقنية المعلومات في المملكة، فإنهـا تقوم حاليا بمراجعة سياساتها التنظيمية. وهذه المراجعة من شأنها أن تـساعد الهيئـة علـى تعـديل سياساتها بما يشجع على دخول مقدمي خدمات ثابتة ومتنقلة جدد إلـى قطـاع الاتـصالات وتقنيـة المعلومات، ونشر تطبيقات جديدة وبنية تحتية للشبكات.

٣/١   تسعى الهيئة من خلال وثيقة طلب مرئيات العموم هذه إلى الحصول على مرئيات الجهات المهتمة بما يساعد الهيئة على وضع سياسات تنظيمية خاصة بمنح تراخيص جديـدة لمقـدمي الخـدمات الثابتـة والمتنقلة. وتعُد الهيئة مشاركة العموم بمرئياتهم عنصراً مهماً من عناصر عملية مراجعة الـسياسات وتعديلها.

٤/١   تعالج وثيقة طلب مرئيات العموم هذه ثمان مجالات في السياسات التنظيمية، هي: نطـاق الخـدمات، وربط الاتصال البيني، وخدمات الاتصال عبر بروتوكـول الإنترنـت (IP Telephony)، وإدارة الطيف الترددي، وإتاحة عناصر الشبكة (Unbundling)، واختيار الناقل، ونقل الرقم المحلي، وجودة الخدمة.

٥/١   كما درست الهيئة موضوع الترقيم الإلكتروني ENUM وأثره علـى خـدمات الاتـصالات وتقنيـة المعلومات. وفي هذه المرحلة، ترى الهيئة أن الترقيم الإلكتروني لا يزال في مراحلـه الأولـى مـن وضع المعايير القياسية له. ولذا، فلا حاجة إلى إدراجه ضمن هذه الوثيقة. على الرغم من أن الهيئـة سوف تواصل باهتمام رصد تقدم الترقيم الإلكتروني.

٦/١   تنقسم هذه الوثيقة إلى جزأين رئيسيين يحتوي الأول منهما (الأجزاء مـن ١ إلـى ٦)، علـى سـياق مرئيات العموم وعلى مقدمة موجزة عن كل مجال من المجالات الثمان للسياسة. أما الجزء الثاني من الوثيقة، فيحتوي على ملاحق تتناول بالتفصيل كل مجال من مجالات السياسية (الملاحق مـن ١ إلـى ٨).

٢   المرئيات المطلوبة

١/٢   تسعى الهيئة، من خلال هذه الوثيقة، إلى الحصول مرئيات من الجهـات المهتمــة حــول الــسياسات التنظيمية المقترحة والمبينة في هذه الوثيقة. ومن هذا المنطلق، فإن الهيئة تدعو جميع المهتمين لتقـديم مرئياتهم مكتوبة عن أي موضوع يرون أن له علاقة بالسياسات التنظيميـة. وســوف تؤخـذ جميـع مرئيات المهتمين في الحسبان، مع مراعاة أن الهيئة غير ملزمة بالأخذ بجميـع مــا ورد فـي تلـك المرئيات.

٢/٢   تشجع الهيئة، على نحو خاص، المهتمين بالمشاركة في عملية الترخيص والـذين يعتزمـون طلـب الحصول على ترخيص أو تراخيص جديدة، أن يخصصوا الموارد اللازمة والوقـت الكـافي لتقـديم مرئيات مفيدة ومفصلة قدر الإمكان عن جميع النقاط المثارة في وثيقة طلب مرئيات العموم، حيث أنه من المحتمل أخذ هذه المرئيات في الاعتبار عند وضع السياسات التنظيميـة المقترحـة لمـنح تقـديم الخدمات الثابتة والمتنقلة والتي سوف تعتمد عليها عملية الترخيص المستقبلية.

٣   نموذج الرد والجدول الزمني والإجراءات

١/٣   يتعين على الجهات المهتمة عند تقديم مرئياتها، تحديد تفاصيل الاتصال بهم، بما في ذلك اسم الجهــة (أو الجهات إذا كان المجيب جزءاً من اتحاد)، فضلاً عن العنوان ورقم أو أرقام الهاتف.

٢/٣   يُرجى من الجهات المهتمة عند تقديم مرئياتهم استخدام النموذج المحدد في الملحق (١) في نهاية هـذه الوثيقة، على أن يذكر بشكل واضح عنوان الملحق (مثل: مجال السياسة)، ورقم الملحق، ورقم الفقـرة التي تتعلق بها المرئيات.

٣/٣   يجب أن ترد جميع المرئيات في موعد أقصاه يوم ١٤/٠٥/١٤٢٧هــ، الموافق ١٠/٠٦/ ٢٠٠٦م.

٤/٣   يتم تقديم الردود المتعلقة بوثيقة طلب مرئيات العموم إلى الهيئة مشفوعة بنسخة الكترونية منها علـى أي من العناوين التالية أو كلاهما:
أ) بالبريد الإلكتروني: 2006licensing@citc.gov.sa
ب) باليد أو بالبريد: هيئة الاتصالات وتقنية المعلومات
مكتب المحافظ
طريق الملك فهد
ص ب ٧٥٦٠٦
الرياض ١١٥٨٨
المملكة العربية السعودية

٤   مرئيات العموم

١/٤   لقد سبق للهيئة أن أصدرت وثيقة لطلب مرئيات العموم برقم ١٤٢٧/٦ وتاريخ ١٤٢٧/٠٣/١٩هـ، الموافق ٢٠٠٦/٠٤/١٧م، بعنوان "وثيقة طلب مرئيات العموم حول الإطار التنظيمي لتراخيص تقديم خدمات الاتصالات الثابتة والمتنقلة في المملكة العربية السعودية"، وقد طلبت مــن خلالهــا مرئيــات العموم حول الخيارات المنظورة المتعلقة بالإطار التنظيمي العام لخدمات الاتصالات الثابتة والمتنقلــة في المملكة.

٢/٤   تقدم الهيئة شكرها إلى كل من ساهم بمرئياته وملاحظاته حول وثيقة طلب مرئيات العمــوم الأولــى. وتعمل الهيئة حالياً على مراجعة تلك المرئيات والملاحظات.

٣/٤   تسعى الهيئة من خلال الوثيقة الثانية هذه إلى الحصول على مرئيات العموم حول السياسات المتعلقــة بمنح تراخيص تقديم الخدمات الثابتة والمتنقلة في المملكة. وتتناول كلا وثيقتي طلب المرئيات عــدداً من الأمور المتعلقة بالترخيص لخدمات ثابتة ومتنقلة جديدة خــلال العــام ٢٠٠٦، وبالتــالي يجــب قراءتهما معاً.

٤/٤   بناءَ على تحليل أولي لمرئيات العموم التي حصلت عليها الهيئة رداً على وثيقة طلب مرئيات العمــوم الأولى المتعلقة بالإطار التنظيمي لتراخيص تقديم خدمات الاتصالات الثابتة والمتنقلة، ترى الهيئــة أن إطار التراخيص المحايد للتقنية والمحدد للخدمة هو الذي سيعمل به عند تنــاول المجــالات المتعلقــة بالسياسات الثمان التي تغطيها وثيقة طلب مرئيات العموم هذه.

٥/٤   تعمل الهيئة على مراجعة ما إذا كان الإطار التنظيمي سيشمل خطة إصدار تراخيص على المــستوى الوطني أو الإقليمي وذلك بالنسبة لتقديم كل من الخدمات الثابتة والمتنقلة.

٦/٤   كما تعتزم الهيئة بنهاية الربع الثاني من هذه السنة إصدار وثيقة ثالثة لطلب مرئيــات العمــوم حــول معايير الترخيص، وشروط طلب الترخيص، وإجراءات الترخيص.

٧/٤   تعتزم الهيئة، كذلك، إصدار الصيغة النهائية للإطار التنظيمــي والــسياسات ذات العلاقــة ومعــايير الترخيص المعمول بها وشروط التقدم لطلب الترخيص وإجراءات الترخيص في الوقت الــذي يمكــن معه للجهات المهتمة تقديم طلباتها في الربعين الثالث أو الرابع من عام ٢٠٠٦.

٥   الأهداف

١/٥   إدراكاً لأهمية قطاع الاتصالات وتقنية المعلومات وآثاره على كل من الاقتصاد والمجتمع السعوديَيْن، فقد اتخذت حكومة المملكة ممثلة بالهيئة خطواتٍ مبدئية لتحقيق المنافسة وذلك من خـــلال التـــرخيص لمقدم ثانٍ للخدمات المتنقلة، ومقدمَيْن اثنين لخدمات الجيل الثالث (3G)، ومثلهما لخدمات نقل البيانات (المعطيات)، فضلاً عن السماح بالعمل في سوق الاتصالات وتقنية المعلومات في المملكة للعديد مـــن مقدمي خدمات الإنترنت والخدمات الأخرى مثل خدمات الأقمار الصناعية، وخدمات النظـــام الآلـــي لتحديد موقع المركبات (AVL)، وخدمات الفيسات (المحطات الطرفية متناهية الصغر عبـــر الأقمـــار الصناعية – VSAT) وخدمات الرسـائل النـصية القـصيرة الجماعيـة (Bulk SMS)، وخــدمات النصوص المسموعة، وخدمات مراكز الاتصالات.

٢/٥   وفق ما تم بيانه من قبل عبر العديد من البيانات الصحفية التي أصدرتها الهيئة، تعتزم الهيئة المـــضي قدماً في مزيد من خطوات التحرير لقطاع الاتصالات وتقنية المعلومات، وقد وضعت لهـــذا الغـــرض قواعد لإنهاء الشريحة المتبقية من هذا القطاع، والمتمثلة في الخدمات الصوتية الثابتـــة، كمـــا تنـــوي إصدار مزيد من التراخيص لخدمات الاتصالات المتنقلة، وذلك خلال عام ٢٠٠٦.

٣/٥   تشمل أهداف سياسة الهيئة:
١/٣/٥   تعزيز تغطية خدمات الاتصالات وتقنية المعلومات على مستوى المملكــة، وزيـــادة كثافـــة خطوط الاتصال وخاصة في النطاق العريض.
٢/٣/٥   تشجيع العمل على توفير سلسلة أوسع من خدمات الاتصالات وتقنية المعلومات عالية الجودة، بأسعار معقولة.
٣/٣/٥   زيادة المنافسة في سوق الاتصالات وتقنية المعلومات، وتمكين الإتاحــة الـــشاملة لخــدمات الاتصالات وتقنية المعلومات المتطورة.
٤/٣/٥   تطوير إطار تنظيمي فعال وثابت وكذلك السياسات المبنية عليه، واللازمـــة جميعهـــا لقيـــام منافسة فعالة ضمن بيئة تنافسية عادلة بين المشغلين الحاليين والجدد.
٥/٣/٥   جذب الاستثمار في قطاع الاتصالات وتقنية المعلومات المتطلب لاستثمارات رأسمالية عالية.

٤/٥   تعتقد الهيئة أن أفضل طريقة لبناء قطاع اتصالات وتقنية المعلومات ذو أمد طويل، ومستدام وتنافسي، ويتسم بالنفاذ الشامل والخدمة الشاملة وتوفر المنتجات والخدمات الجديدة، هي من خلال المنافسة بـــين شبكات النفاذ المحلية. ويرتبط هذا الأمر ارتباطا مباشراً بمستوى الاستثمار في تلك الشبكات من قبـــل مستثمرين متعددين.

٥/٥   لتحقيق ما سبق بيانه، فإن السياسات التنظيمية المقترحة، التي ينبغي على الهيئة أن تتبناها، يجـــب أن تعزز الاستثمار في بناء بنية تحتية للشبكات توفر سعة متزايدة من النطاق العريض، وبخاصة ضـــمن شبكات النفاذ المحلية.

٦ مقدمة إلى كل سياسة

تتناول الأوراق المرفقة أهم مجالات السياسات التنظيمية التي تعتزم الهيئة تطبيقها:

١/٦ **نطاق الخدمات:** تتناول الخدمات التي ينبغي أن تكون إلزامية أو مسموح بها في التـــراخيص الجديـــدة للخدمات الثابتة والمتنقلة.

٢/٦ **ربط الاتصال البيني:** تتناول آثار استخدام تقنية الشبكات المبنية على أساس بروتوكول الإنترنت علـــى تنظيمات ربط الاتصال البيني، إضافة إلى المواضيع المتعلقة بربط الاتصال البيني عند نقـــاط انتهــاء الكابلات الدولية، وتقديم خدمات تأجير كيابل الألياف البصرية.

٣/٦ **خدمات الاتصال عبر بروتوكول الإنترنت (IP Telephony/VoIP):** تتناول موضــوعات الــسياسة المتعلقة بإدخال خدمات الاتصال عبر بروتوكول الإنترنت في المملكة العربية السعودية.

٤/٦ **إدارة الطيف الترددي:** تتناول كل من المبادئ الأساسية لإدارة الطيف الترددي، وخيـــارات الـــسياسة اللازمة للوفاء بالطلب المتزايد على الطيف الترددى، وطرق رفع كفاءة استخدام الطيف.

٥/٦ **إتاحة عناصر الشبكة:** تتناول الموضوعات المتعلقة بإتاحة عناصر الشبكات العامة للاستخدام من قبل مقدمى الخدمات المرخص لهم (unbundling).

٦/٦ **اختيار الناقل:** اختيار الناقل عبارة عن آلية تتيح للمشتركين المتصلين مباشرة بـــشبكة أحـــد مقـــدمى الخدمات باختيار مقدم خدمة آخر للحصول على خدمات الاتصالات الصوتية. وتتناول هـــذه الـــسياسة مدى الحاجة إلى إدخال خدمة اختيار الناقل والقضايا التنظيمية والفنية ذات العلاقة.

٧/٦ **نقل الرقم المحلي:** نقل الرقم المحلي هو قدرة المستخدم النهائي على الاحتفاظ بنفس الــرقم الهــاتفي الجغرافي دون أي تأثير ، وذلك عند الانتقال من مقدم خدمة إلى آخر ، أو عند الانتقال من موقع إلـــى آخر داخل منطقة الاتصال المحلي التابع لها المشترك مع الاحتفاظ بطبيعة الخدمة المقدمــة. وتتنــاول هذه السياسة مدى ضرورة إدخال هذه الخدمة والقضايا المتعلقة بتنفيذها.

٨/٦ **جودة الخدمة:** تشير جودة الخدمة إلى المعايير التنظيمية لقياس مدى اعتماديـــة شـــبكات الاتـــصالات وتقنية المعلومات أو خدماتها والقدرة على استخدامها. وتتناول هذه السياسية مـــدى ضـــرورة تنظـيم جودة الخدمة، كما تتناول نطاق جودة الخدمة والخيارات المختلفة المتعلقة بالسياسة.

Attachment 1

Scope of Services

3 INTRODUCTION

1.1 As stated in paragraph 4.4 in the first section of this document, the CITC is in principle aiming to implement a technology-neutral service-specific licensing framework. The new licensing framework takes into account the current trend of increasing convergence of Information and Communications Technology (ICT) services and is in line with recent regulatory moves towards greater use of general authorizations and simplified licensing.

1.2 As regulatory frameworks become more established and ICT markets become more mature, licensing authorities have become increasingly willing to reduce regulatory intervention. Instead, greater reliance is placed on general conditions, ex post regulatory remedies and industry self-regulation in the areas previously covered by specific license conditions.

1.3 The Telecommunications Bylaw of the Kingdom of Saudi Arabia provides a framework for licensing four types of licenses: telecommunications licenses, radio licenses, number licenses and equipment licenses. Telecommunications licenses can be of two types: individual licenses or class licenses.

1.4 According to the Bylaw an individual license is required for fixed voice telephone services, public mobile cellular telecommunications services, operation of a public ICT network, national and international fixed and mobile data communications services and any other type of service that the CITC decides should require an individual license.

1.5 Also according to the Bylaw, class licenses grant more than one service provider of the same class the right to offer ICT services or operate ICT networks except for services requiring an individual license and the operation of a public ICT network. Class licenses can be Type A and Type B. For Type A class licenses the CITC can limit the number of licenses authorized and establish qualification and licensing procedures according with the CITC statutes. Type B class licenses cannot be limited in number and require only a simple registration procedure.

1.6 The CITC is reviewing the current licensing regime in view of the update to the regulatory framework and associated policies, and of WTO obligations.

4   ISSUES, OPTIONS AND CONSIDERATIONS

2.1   License Classification

2.1.1   The CITC is currently reviewing the licensing framework. One issue the CITC is addressing in this context is whether to change the current scheme for license classification, i.e., to define the distinction between individual and class licenses for fixed services.

2.1.2   Proposed license classification changes are designed to support achievement of CITC's overarching objectives for a long-term sustainable and competitive ICT industry structure, characterized by universal access/universal service and availability of innovative products and services, to be achieved. This includes promoting competition among access networks, and limiting restrictions on the number of services that can be offered.

2.1.3   The CITC has examined several different licensing regimes that are being implemented in ICT services markets. In some countries, separate licenses are still issued on a service-by-service basis (such as international services). Other countries differentiate between facilities-based and services-based competition. A third method is to assign individual licenses or class licenses based on whether or not they require the use of scarce resources, such as rights of way, spectrum and numbers. A fourth licensing approach that is now being adopted in several countries is to issue licenses that do not specify the technology or service to be provided, i.e. fully unified, technology and service neutral licenses.

Considerations

2.1.4   The CITC considers that a facility based service provider refers to a provider that deploys and/or operates any form of ICT network elements and/or facilities for the purpose of providing the services to third parties, who may include the general public, other licensed ICT providers or business customers;

2.1.5   The CITC considers that a service based provider refers to a provider not owning or building a network and who leases ICT network elements (such as transmission capacity and switching services) from any facility based service provider in order to provide their own ICT services, or to resell the ICT services of facilities based providers to end users.

2.1.6   In line with the CITC objectives for its liberalization plan, the CITC proposes to redefine the existing licensing regime for the future using the same two categories of licenses, i.e. Individual and Class Licenses, but using a different form to distinguish them.

2.1.7   Individual licenses would be required for facility based providers (FBPs).

2.1.8   Class licenses would be issued for any other licensable activities, which would include those ICT services providers not owning or building a network. Class licenses would

be service based licenses. Distinct Class licenses (Type A and B) would not exist in the proposed framework.

2.1.9 The CITC believes this approach is clear, supports the principles of objective and transparent decision making, and is consistent with the CITC's overarching objectives and policy for the ICT sector.

2.2 Definition and Scope of Fixed Individual Licenses

2.2.1 The CITC Bylaw defines fixed services as a telecommunications or radiocommunication service that provides for communication between fixed ground stations.

2.2.2 The CITC is considering what the scope of services should be, and how the services should be specified for the individual licenses.

Considerations

2.2.3 The CITC is considering defining fixed services, in the context of fixed services licensing, as electronic communications services between fixed apparatus or stations but excluding mobile services. The scope of fixed services includes the emission, transmission or reception of real time and non real time information, including voice, sound, data, text, video and pictures, or a combination thereof, and Value Added Services. However, broadcasting content is subject to separate licensing from the Ministry of Culture and Information.

2.2.4 The CITC's preliminary view is that individual licenses might be used to provide any type of fixed services, as long as they comply with applicable regulations, at local, national and international level.

2.2.5 The CITC's preliminary view is that this more generic definition of the scope of services of the individual licenses is justifiable, as technological forces are driving convergence at the services level.

2.2.6 By defining the scope of individual fixed services licenses in a more generic way the CITC is also safeguarding the market's attractiveness for new entrants in the fixed services sector, as this allows more room for innovation and the development of new market segments.

2.3 Scope of Fixed Class Licenses

Considerations

2.3.1 Class licenses would be issued for service based providers. With respect to class licenses, the CITC's preliminary view is that the new class licenses will authorize each licensee to provide a limited scope of specific services. The proposed option is to utilize the existing service scope, as defined in the Bylaw. To the extent that it is necessary to change the scope of services in the license, the CITC will consider a

potential new scope based on comments received on this public consultation document.

2.3.2　The range of services that would require a class license includes, but is not limited to, resale of leased circuit services, resale of international services, public internet access services, virtual private network services, public payphone services, and other Value Added Services.

2.4　Definition and Scope of Mobile Individual Licenses

2.4.1　The CITC is considering the following definition for mobile services in the context of licensing: Mobile service means a radio communication service configured so as to permit full mobility of customer terminals (radio stations), which permits a customer to receive communications from or communicate with any apparatus or station. Mobile services in this context shall exclude satellite mobile services.

2.4.2　For mobile individual licenses the CITC's preliminary view is to allow the same scope of services as in the existing mobile licenses (such as voice communications services, data services, short messaging service, multimedia messaging service and ancillary digital services and features, such as call waiting, call forwarding and calling line identity), but excluding mobile virtual services and cellular satellite mobile services.

2.5　Scope of Mobile Class Licenses

Considerations

2.5.1　The CITC's preliminary view is that the new Class licenses will authorize each licensee to provide a specific and limited scope of services.

2.5.2　The scope of these services could include any non-facilities based mobile services and satellite mobile services.

2.6　Directory Inquiry Services

Considerations

2.6.1　Directory Inquiry Services are mandated for the Dominant Service Provider. The existing trend in different markets around the world is to not mandate directory services for new entrants in the fixed market. The CITC's preliminary view on this subject is that for non Dominant Service Providers offering directory services should be optional.

2.7　Emergency Services

2.7.1　Emergency calls have to be routed to an appropriate emergency response centre. Currently such calls have to be delivered with an accompanying CLI.

2.7.2 Some countries mandate that a call back capability for emergency response has to be provided. In some cases this obligation is restricted to cases where it is technically feasible.

<u>Considerations</u>

2.7.3 The CITC is of the opinion that for calls to emergency services, caller location information should be provided by all public ICT service providers.

Attachment 2

Interconnection

1   INTRODUCTION

1.1   In the Communications and IT Bylaws of the KSA, interconnection is defined as:

The physical or logical linking of telecommunications networks used by the same or a different service provider in order to allow the users of one service provider to communicate with users of the same or another service provider, or to access the facilities and/or services of another service provider. Interconnection is a specific type of access implemented between service providers.

1.2   Interconnection based on fair prices and fair terms and conditions is a prerequisite for effective competition in the Kingdom.

1.3   The CITC has recently approved a revised Reference Interconnection Offer (RIO) filed by the Saudi Telecommunications Company (STC). The CITC intends to initiate a review of this RIO by April 2007.

1.4   In this attachment the CITC is considering the requirement for certain new interconnection arrangements, including those resulting from the introduction of new technologies. This attachment addresses the specific issues of IP-based networks and Next Generation Networks (NGN) interconnection, interconnection at overseas cable landing point and dark fiber. However, the CITC welcomes comments on any other issues in the CITC interconnection regime, including the interconnection guidelines and the approved STC RIO, both of which are published on the CITC website. (See www.citc.gov.sa)

2 DEFINITIONS AND DESCRIPTIONS

2.1 ITU-T gives the following definition of NGNs and IP-based networks:

2.1.1 An IP-based network: a network in which the Internet Protocol is used as the OSI layer 3 protocol (OSI Reference Model)

2.1.2 A Next Generation Network (NGN) is a type of IP-based network able to provide services including Telecommunication Services and able to make use of multiple broadband QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies. It offers unrestricted access by users to different FBPs. It supports generalized mobility which will allow consistent and ubiquitous provision of service to users.

2.2 The architecture of NGNs allows the decoupling of service and transport layers. This means that FBPs can enable new services by defining them directly in the service layer, without considering the transport layer.

2.3 NGNs may be deployed by the incumbent and by other licensed facility based providers. In the case of an incumbent with a substantial circuit-switched network in place, NGN roll-out is normally accomplished by converting the trunk and international network first, followed by the access network. Alternatively, NGN roll-out may be accomplished one geographic area at a time.

2.4 Subscribers do not need to buy new terminal equipment to be connected to an NGN, because the access nodes (the NGN equivalent of local exchanges) will be able to support both analog and digital CPE, connected by copper or fiber.

2.5 The conversion of all networks in the Kingdom at some point in the future to IP-based architectures is inevitable, since major vendors will eventually cease to manufacture and support circuit-switching equipment.

2.6 An International Cable landing station can be defined as the building in which an international submarine cable is connected to the national public networks.

2.7 Dark fiber refers to an individual fiber (or pair of fibers) within a fiber optic cable which does not have optical transmission equipment connected to it, and (for the purposes of this document) is available for rental to FBPs who may install their own transmission equipment at either end of the fiber(s).

3 ISSUES, OPTIONS AND CONSIDERATIONS

3.1 General Principles of Interconnection between Circuit Switched Networks and IP-based Networks

3.1.1 The interconnection of an IP-based network to a circuit switched network poses some unique challenges, since the two types of networks have different architectures and deal with traffic in different ways.

3.1.2 Costs may be incurred when interconnecting with an IP-based network over and above those that would be incurred when interconnecting to another circuit switched network.

3.1.3 The options are that either the circuit switched network FBPs or the IP-based network provider should be required to bear some or all of the additional interconnection costs. Alternatively FBPs should be allowed to reach their own commercial agreements without ex ante regulation.

Considerations

3.1.4 Where traffic needs to be passed from a circuit switched network to an IP network, protocol conversion needs to occur. Extra billing software may also be required by the IP-based network FBP if it is to charge for interconnection of voice calls on a timed basis.

3.1.5 It is unlikely, though not entirely impossible, that new entrants to the Kingdom's fixed voice ICT market will construct circuit-switched networks. It is therefore possible that the new entrants will have full IP architectures in place before the incumbent.

3.1.6 Any interconnection agreements between circuit-switched networks and IP-based networks will need to include issues such as network topology, interface specifications (including signaling systems), provisioning procedures, operations and maintenance procedures, performance management and forecasting.

3.1.7 It is the CITC's view that the circuit switched network FBPs should not be required to incur additional costs when interconnecting with an IP-based network over and above those they would incur when interconnecting to another circuit switched network.

3.2 Capacity-based Versus Time-based Charging

3.2.1 Currently, charges for call termination, origination and transit are charged on a time basis. In the area of IP interconnection for internet traffic, interconnection charges are usually calculated on a capacity basis, with the access seeker paying the access provider for the service. For IP-based interconnection, the options in the Kingdom include:

3.2.1.1 All interconnection charges for PSTN traffic would continue to be time based

3.2.1.2 All interconnection charges for PSTN traffic would be on a capacity basis, with the interconnection seeker paying the interconnection provider

3.2.1.3 A 'bill and keep' regime, in which all FBPs keep 100% of the retail revenues they generate.

3.2.1.4 All FBPs would offer both time-based and capacity-based interconnection options

3.2.1.5 Regulatory forbearance – FBPs would be required to agree on tariffs for interconnection between themselves, with regulatory intervention only if required.

Considerations

3.2.2   IP telephony technology allows for call set-up and tear-down to either IP or circuit-switched terminal equipment, and so for calls which terminate on an IP-based network, it is possible to calculate call durations and bill accordingly. However, for transit traffic, this is more difficult, since voice telephony traffic in transit on an IP-based network may be indistinguishable from other types of traffic unless special measures are taken to identify it.

3.2.3   Capacity-based interconnection charges may tend to encourage flat rate pricing of PSTN services. This may benefit heavy users of PSTN services and penalize those who use the services less intensively.

3.2.4   Under a capacity-based charging regime it may be more difficult to apportion payments between FBPs for premium rate services, or other calls to non-geographic number ranges.

3.2.5   The CITC proposes to exercise forbearance initially, since there are no regulated international benchmarks for termination and/or transit rates. The market players would be allowed to negotiate agreements, but with ex ante regulations if required.

3.3   **Symmetry of Call Termination Charging Structures and Services**

3.3.1   Currently, where there are competing FBPs offering call termination, the charging structure and rates for termination are required by the CITC to be symmetric. This is currently only the case in the mobile market. The charging structure for these FBPs is time based and the rates are required to be the same for call termination to their respective mobile number ranges. The charging structure for call termination to STC's fixed number ranges is also time based, although the rates are lower than those for mobile termination.

3.3.2   Hence, the current situation in the Kingdom is that FBPs with technologically similar networks (e.g. cellular) for voice telephony have identical charging structures and rates for termination, and operators with technologically different types of networks (e.g. cellular versus fixed) have identical charging structures, but different rates.

3.3.3 If new charging structures for IP-based number ranges (e.g. on a capacity basis) were implemented for voice termination to to IP-based FBP number ranges, there are two options for dealing with operators of circuit-switched networks:

3.3.3.1 Circuit-switched network FBPs would have different charging structures for voice call termination to those of IP-based FBPs (e.g. they would retain time based charging while mandating capacity-based charging for IP-based FBPs)

3.3.3.2 Circuit-switched FBPs would have the same charging structure for voice call termination as IP-based FBPs.

Considerations

3.3.4 The CITC is considering whether there is any benefit to, for example, the application of capacity-based charging for termination of calls to mobile networks or to fixed circuit-switched networks.

3.4 Interconnection Between IP-based Networks and Circuit- Switched Networks

3.4.1 In order to maintain continuity when interconnecting to an IP-based network certain services may need to be supported, including:

3.4.1.1 end-to-end bidirectional and unidirectional DTMF tones

3.4.1.2 in-band audio tones and announcements to the user

3.4.1.3 presentation of a number in ITU-T E.164 format identifying the calling party

3.4.1.4 transport of calling line identification and calling line identification restriction

3.4.1.5 malicious call tracing

3.4.1.6 emergency calling

3.4.1.7 E.164 number portability.

Considerations

3.4.2 IP-based networks offer opportunities for new interconnection products, but they may not be able to economically support all legacy interconnection products in the long term. This may be particularly true for certain kinds of data services, for example.

3.4.3 The CITC's preliminary view is that existing services, such as those listed in 3.4.1 above, should be supported across the interconnect to IP-based networks.

3.5 New Interconnection Services

3.5.1 IP-based networks will offer the possibility for new interconnection services. One of the principal advantages of IP-based networks is that they allow FBPs to bring new retail services to market relatively quickly. Some of these new services may also require specialized interconnection – e.g. to the application and intelligence layers of other IP-based networks, to provide, for example, customer location information or specific session controls.

3.5.2 There are two broad options to regulation in this area:

3.5.2.1 Avoid early intervention in the regulation of access to these new applications, on the grounds that it will not be clear at the outset which new retail services will emerge (and hence which new interconnection services will be most important)

3.5.2.2 Intervene at an early stage on the grounds that without fair access to the application and intelligence layers, certain IP-based networks may quickly achieve market dominance, or because early action will promote deeper competition and innovation in ICT services in the Kingdom.

Considerations

3.5.3 Although IP-based networks will offer the potential for service innovation, both by the network owners and by third parties, the CITC is of the preliminary view that it should avoid early intervention since it is by no means clear at this time which new services will be most successful with end users, and the degree to which FBPs will require or desire access to the applications and intelligence layers of other IP-based networks.

3.6 Quality of Service over Interconnection Links

3.6.1 IP interconnection has specific challenges with regard to the measurement and maintenance of quality of service for different types of traffic. Whereas in traditional networks, different types of traffic (e.g. telephony, business data services, internet IP traffic) are passed over logically separate interconnection links, with IP-to-IP interconnection, all types of traffic may be passed over the same logical links.

3.6.2 The CITC is considering which are the most appropriate regulatory methods for ensuring quality of service on interconnection links to and between IP-based networks.

Considerations

3.6.3 IP networks do not inherently differentiate between different types of traffic, however, among the various types of IP traffic, voice traffic and media streams are the most sensitive to packet loss, high latency and other network problems. It is technically possible to achieve differentiation with the addition of specialized technology. There is a risk, therefore, that the quality of some services, especially voice telephony, could deteriorate.

3.6.4 The CITC considers that, as far as practically possible, there should be no degradation to the quality of service experienced by the end user, when connecting from a circuit-switched network to an IP-based network.

3.7 Migration of STC's Network to a NGN Network

3.7.1 As STC migrates its network to a NGN architecture, the utilization of its circuit-switched network will fall. Hence the cost per unit of traffic for interconnection to STC's circuit-switched network is likely to rise.

3.7.2 In order to accurately model the long run incremental costs of a migrating network, the CITC would need to understand the relative costs of call termination on STC's circuit-switched versus its NGN network, and the company's migration plans to IP.

Considerations

3.7.3 The CITC's view is that the most appropriate way to deal with this is to mandate a blended interconnection rate, which encompasses the assumed lower cost of interconnection to the NGN and the higher cost of interconnection to the circuit-switched network.

3.8 Interconnection at International Cable Landing Stations

3.8.1 STC currently does not offer other licensed FBPs the opportunity to interconnect with international cables at international cable landing stations. STC does offer capacity for sale on international cables, and provides transmission link circuits to connect another licensed FBP's Point of Presence (POP) to the relevant landing station.

3.8.2 New international cable capacity will be made available by FLAG Telecom, which will have two spurs to its international cable network connected in the Kingdom.

Considerations

3.8.3 Until very recently, the only international cable capacity available in the Kingdom was on the SEA-ME-WE (South East Asia, Middle East, Western Europe,) international cables. These cables are owned by a consortium of international telecoms service providers, of which STC is a member. STC owns the cable landing facilities for these cables in the Kingdom.

3.8.4 The landing of the FLAG Telecom cable in the Kingdom means there will be a second source of international cable capacity. Other licensed FBPs should be able to purchase capacity on this cable system directly from FLAG Telecom.

3.8.5 If the landing of the FLAG Telecom cable means that there will be true competition in international cable capacity, the CITC is considering whether there is a need to mandate interconnection at international cable landing points controlled by STC.

3.9 Leasing of Dark Fiber on the National Backbone FBP Network

3.9.1 A memorandum of understanding between Bayanat Al Oula, Etihad Etisalat and Integrated Telecom Company has been established to build a national backbone FBP network and under an agreement with CITC, the parties to the agreement are obligated to offer dark fiber to new FBPs.

3.9.2 The CITC is considering whether it should also mandate STC to offer dark fiber leases to other FBPs. At the present time STC is not obligated to do so.

Considerations

3.9.3 The advantages of mandating STC to offer dark fiber leases would be to ensure equal regulatory treatment of STC and the new consortium, provide the new FBPs a competitive choice of supplier, mitigate potential Rights of Way issues and expedite their network roll-outs.

3.9.4 The CITC's preliminary view is to mandate STC to offer dark fiber leases on national backbone cables to new FBPs.

Attachment 3

IP Telephony Services/VoIP

6   INTRODUCTION

1.1   IP-based networks and technologies are increasingly being deployed in voice communications services. They have the potential of enabling new services that are significantly different from traditional voice services.

1.2   IP-based technology has many benefits over traditional PSTN circuit switched technology. It can potentially lower the cost of providing voice services and at the same time allow new innovative products and services to be offered.

1.3   New FBPs can leverage the advantages of IP-based technologies to compete in the supply of voice communications services.

7   DEFINITIONS AND DESCRIPTIONS

2.1   The terms "IP Telephony", "VoIP" and other variants often generates confusion as there are many different definitions used by various organizations. Some use them interchangeably while others give them distinct definitions. Further confusion is caused by using the terms to refer to both the IP-based technologies and the services that are enabled by these technologies.

2.2   Definitions used by various organizations:

2.2.1   ITU (Source: ITU's The Essential Report on IP Telephony 2003): IP Telephony is the exchange of information primarily in the form of speech that utilizes a mechanism known as Internet Protocol. There are two types of Internet Telephony according to the ITU:

   2.2.1.1 Type 1: Those requiring the intervention of an FBP and enabling, by means of a gateway, the partial or full provision of communication to the global public switched network.

   2.2.1.2 Type 2: Those requiring no intervention by a third provider and without the need for a gateway; in this case, the application of VoIP is seen as one of the multiple applications of the Internet world.

2.2.2   ETSI's definitions (Source: ETSI's website 2006): Internet telephony, also known as voice-over-IP or IP telephony is the real-time delivery of voice between two or more parties, across networks using the Internet protocols, and the exchange of information required to control this delivery.

2.2.3   European Regulators Group (Source: ERG's VoIP Common Statement 2005): VoIP is the conveyance of voice, fax and related services partially or wholly over packet-switched IP-based networks.

2.3   For the purpose of this consultation paper, we shall adopt the following definitions:

2.3.1   VoIP is the generic name for the transport of voice traffic using IP technology. VoIP traffic can be carried on a private managed network or the public Internet or a combination of both.

2.3.2   IP Telephony services relate to a form of VoIP that requires gateways, telephone devices and E.164 numbers.

2.4   The issues discussed in this attachment of the Public Consultation Document are focused on IP Telephony services.

8 ISSUES, OPTIONS AND CONSIDERATIONS

3.1 IP Telephony Services to be Allowed

3.1.1 In view of the new fixed license to be awarded, the CITC needs to address the type of IP Telephony services to be allowed in the KSA.

<u>Considerations</u>

3.1.2 In line with the objective of the CITC to introduce competition in the communications & information technology sector, the CITC is considering the option of allowing all types of IP Telephony services to be offered by FBPs in the KSA. This is also aligned with the overall technology-neutral regulatory framework approach that the CITC is considering to adopt.

3.2 Emergency Services

3.2.1 Current fixed line voice services provide access to emergency services such as 112 and 999. Due to the nomadic nature of IP Telephony services, there may be technical issues in providing the same access to emergency services. The options available for the CITC to consider are:

3.2.1.1 Impose obligations on all IP Telephony FBPs to provide full access to emergency services and disallow FBPs that cannot comply with these obligations

3.2.1.2 Allow IP Telephony FBPs an option not to provide emergency services, but with a mandatory requirement that the IP FBP will make the consumers fully aware of this limitation

<u>Considerations</u>

3.2.2 Access to emergency services is a basic capability that many consumers expect from their telephony FBP. To safeguard the interest of consumers, the CITC proposes that all IP Telephony FBPs should provide access to emergency services equivalent to that of traditional PSTN fixed lines.

3.3 Quality of Services (QoS)

3.3.1 IP Telephony services may use the public Internet for conveyance of voice traffic. The QoS is thus more difficult for FBPs to guarantee compared to traditional fixed line voice services. The policy options for regulation of QoS are:

3.3.1.1 Impose the same QoS obligations for new IP Telephony services as for circuit-switched fixed telephony, and disallow services that cannot comply

3.3.1.2 Review the existing QoS indicators and standards for circuit-switched fixed telephony to specify more relevant requirements and apply the same revised

QoS obligations for IP Telephony as for circuit switched fixed telephony, and disallow services that cannot comply.

3.3.1.3 Allow IP Telephony FBPs an option not to comply with QoS of circuit-switched fixed telephony, but with a mandatory requirement that the IP FBP will make the consumers fully aware of the potential lower quality

Considerations

3.3.2 The CITC proposes to impose the same QoS standards as for circuit switched Fixed Telephony only on IP Telephony services that replace existing Fixed Telephony services and invites proposals on appropriate QoS indicators and standards. In the case of services for which QoS obligations are waived, the CITC proposes that FBPs comply with the following consumer protection requirements:

3.3.2.1 Clear indications on marketing material (e.g. brochures, website, advertisements) on the potentially lower quality of IP Telephony services

3.3.2.2 Explicit related information on subscribers' contracts/license agreements

3.4 Numbering Scheme

3.4.1 The nomadic nature of some IP Telephony services requires that different numbering scheme options be considered. The options available to CITC are:

3.4.1.1 Apply the current numbering scheme using the geographic numbering structure for both IP Telephony services and traditional PSTN services

3.4.1.2 Implement a separate number scheme for IP Telephony services using a new Access Code prefix

Considerations

3.4.2 For IP Telephony services that replace traditional fixed lines and retain the geographic meaning of phone numbers, the CITC proposes to use the same numbering scheme as current fixed line services. For other IP Telephony services, the CITC proposes to use a separate numbering scheme, with a new Access Code, to differentiate these services from traditional voice services.

3.5 Universal Service Fund (USF) Obligations

3.5.1 The CITC has proposed a Universal Service / Universal Access policy for approval. This policy includes setting up a Universal Service Fund (USF) for financing of universal service projects and universal FBPs. This policy requires all FBPs to contribute to the USF.

3.6 Lawful Interception

3.6.1.1 Current voice communication FBPs are required to provide the capabilities for lawful interception of calls for national securities reasons. IP Telephony services can carry voice data over multiple networks and are capable of complex encryption. These factors make lawful interception more challenging.

Considerations

3.6.2 From a national security perspective, the requirement is for all communications services providers to allow for lawful interception and call monitoring. The CITC therefore requires that all FBPs, including IP Telephony FBPs, must provide Lawful Interception capabilities.

3.7 Blocking of IP Telephony Traffic by Facility Based Providers (FBPs) in the KSA

3.7.1 There is network equipment available today that allows circuit-switched FBPs to block or selectively degrade incoming IP Telephony traffic. To ensure a level playing field in the KSA, the options available for the CITC to consider are:

3.7.1.1 Allow blocking of IP Telephony traffic by FBPs, based upon appropriate justification to be filed by FBPs for CITC's approval

3.7.1.2 Disallow blocking of IP Telephony traffic by FBPs

Considerations

3.7.2 The CITC proposes that FBPs will not be allowed to block the IP Telephony traffic without prior approval from the CITC.

3.8 Technical Arrangements for IP Telephony Interconnection

3.8.1 As IP Telephony services are based on new technologies, the Interconnection technical arrangements are not as mature as PSTN networks. The options available for the CITC to consider are:

3.8.1.1 Intervene to specify technical requirements of IP Telephony-IP Telephony and IP Telephony-PSTN interconnection arrangements

3.8.1.2 Let FBPs decide among themselves

Considerations

3.8.2 The CITC proposes to exercise forbearance in specifying the technical aspects of IP Telephony interconnection. Although there is no universally agreed set of interconnection technical standards for IP Telephony, considerable progress is being made by FBPs, vendors and industry groups in standardizing a core set of technical

interconnection specifications. The CITC will constitute market and industry groups to find suitable solutions on this issue.

Attachment 4

Spectrum Managemnt

1 INTRODUCTION

1.1 This attachment discusses proposed policy changes in spectrum management within the Kingdom of Saudi Arabia (KSA) with particular emphasis on aspects impacting the fixed and mobile license process.

1.2 The key objectives for spectrum management are:

1.2.1 Provide access to appropriate spectrum in response to demand;

1.2.2 Maintain an interference free environment;

1.2.3 Balance conflicting interests and demands between users;

1.2.4 Maximize the economic returns to society from the use of spectrum; and

1.2.5 Support the growth of a fair and sustainable competitive market.

1.3 To achieve these goals in a market increasingly challenged by an excess of demand over supply, the best long term spectrum management principle is for the regulator to ensure the increasingly efficient use of available spectrum. Spectrum management processes must therefore adapt to pursue this principle.

1.4 This attachment proposes changes to the existing spectrum management methods employed by CITC consistent with spectrum management methods increasingly employed by international "best-practice" administrations.

2 DEFINITIONS AND DESCRIPTIONS

2.1 Spectrum management refers to the regulatory, operational, technical and administrative processes used to plan, co-ordinate and manage scarce radio spectrum resources.

3 ISSUES, OPTIONS AND CONSIDERATIONS

3.1 Key Spectrum Management Issues

3.1.1 The key issues include:

3.1.1.1 What basic principles should govern and direct spectrum management?

3.1.1.2 How should increasing and often competing demands for spectrum be handled within the KSA, particularly when demand exceeds supply?

3.1.1.3 In the face of this demand, how should spectrum users should be encouraged to make more efficient use of spectrum?

Considerations

3.1.2 The CITC recognizes that implementing a spectrum management framework which encourages spectrum efficiency is critical in order to meet the long term increasing demand for spectrum. Management of competing demands and encouragement of efficient use need to be driven by this key principle.

3.2 Spectrum Management Methods

3.2.1 There are three approaches adopted for spectrum management; Command and Control, Market-driven and Unlicensed ('Commons') methods.

3.2.1.1 Command and Control, the traditional centrally regulated management of spectrum and utilization. The regulator is responsible for determining all aspects of spectrum use including assignment of spectrum to users, and the services permitted. This traditional approach frequently uses a 'first-come-first-served' spectrum assignment methodology. Where demand for spectrum exceeds supply, this method can be inefficient and a poor driver of spectrum efficiency,

3.2.1.2 Market-driven, where spectrum assignments are defined by the regulator but the market determines its ultimate usage. Spectrum pricing is used by the regulator to balance spectrum supply and demand and to encourage improved spectrum utilization. New entrants who can achieve greater efficiency can afford to pay more for a given range of spectrum. Existing users may change to more efficient technologies generating savings and/or revenues from selling or leasing spectrum which is no longer required.

3.2.1.3 Unlicensed ("commons") use, where services with low risk of interference to licensed services are permitted unlicensed access to selected spectrum. This approach usually permits users, without the need for any licensing process, to share a modest range of spectrum assignments by using relatively low power levels and following a basic set of emission and interference rules. This spectrum management method can deliver highly efficient spectrum use, but currently cannot be used over a broader range of spectrum due to the increased potential for interference to licensed systems.

Considerations

3.2.2 The traditional "command and control" methods commonly used by regulators provide few incentives to encourage improvements in spectrum efficiency. Although satisfactory for markets where spectrum demand can be reasonably met by available supply, other methods permit more flexible and responsive delivery of spectrum when demand exceeds supply.

3.2.3 CITC proposes to continue to use a mix of these spectrum management methods, with an increasing emphasis on market-driven methods, in line with current international "best-practice".

3.3 Increasing Demand for Spectrum

3.3.1 To meet the increasing demands for spectrum, the options available to the CITC include:

3.3.1.1 Do nothing;

3.3.1.2 Release further spectrum;

3.3.1.3 Redeploy existing spectrum; and

3.3.1.4 Encourage migration to more efficient systems.

Considerations

3.3.2 The best option for effective long term spectrum management is to encourage users to migrate to increasingly more spectrally efficient systems. For the majority of spectrum and services, financial incentives have been identified as the best method to encourage improvement in spectrum efficiency.

3.3.3 The CITC also proposes to implement 'use-it or lose it' policies to ensure spectrum is either used efficiently and effectively, or redeployed to FBPs and for services better able to make efficient use of that spectrum. The CITC is also considering the introduction of new license terms to streamline possible future spectrum refarming.

3.3.4 Spectrum efficiency will be judged by the CITC using international best practice benchmarks. The CITC are open to suggestions on alternative methods.

3.4 Recurring Fees

3.4.1 Recurring (e.g. annual) fees relate to spectrum use, or for services making use of spectrum. Recurring Fee options include:

3.4.1.1 Administrative fees;

3.4.1.2 Service related fees (i.e. Based on subscriber numbers);

3.4.1.3 Fees based on revenue sharing; or

3.4.1.4 Incentive pricing fees

Considerations

3.4.2 The method which best encourages users to improve spectrum efficiency is the use of incentive pricing. Of the available incentive pricing alternatives, CITC is considering incentive pricing fees based on marginal opportunity costs. Current fees based on administrative pricing and/or revenue sharing do not necessarily encourage spectrum efficiency. Marginal opportunity costs are directly related to spectrum efficiency, based on the value of the benefits the user passes up by choosing to use the current spectrum and technology over the next "best" alternative. Although more complex to establish, it is the most appropriate method which provides a timely match with prevailing market conditions.

3.4.3 The CITC is considering the introduction of incentive-based recurring fees where spectrum demand exceeds (or is expected to exceed) supply, where the spectrum is able to be used by other services and where excess demand exists from those other services, and where the prevailing procedures permit the collection of such fees. Weighting factors, relating to frequency, bandwidth, coverage area and other parameters, and similar to those already in use by the CITC, would also be used in the determination of these incentive based fees.

3.4.4 Existing fee methods would continue to apply to spectrum which is not congested or is not able to be used to reduce spectrum congestion in other bands or for users where no alternative options are available.

3.4.5 Under this approach, recurring fees may rise significantly over time in order to encourage the overall key objective of continual improvement in spectrum efficiency.

3.4.6 The CITC is also considering the introduction of spectrum trading in selected bands at some future date. Although not permitted in the KSA today, this may permit spectrum licenses to be sold, leased or traded, providing a further method to improve spectrum efficiency.

3.5 Award of Spectrum

3.5.1 Options available to award spectrum include:

3.5.1.1 First-Come-First-Served

3.5.1.2 Beauty Contests, and

3.5.1.3 Spectrum Auctions

<u>Considerations</u>

3.5.2 The CITC proposes to continue using the traditional 'first-come first-served' command and control method for awarding spectrum where demand can be reasonably met by a combination of available spectrum coupled with encouraging increased spectrum efficiency.

3.5.3 Of the available options for awarding spectrum in bands where demand exceeds available spectrum supply, beauty contests require the establishment of suitable criteria and a lengthy evaluation of competing bidders. Spectrum efficiency may not be guaranteed, and process transparency is difficult to achieve.

3.5.4 Auctions can reduce transaction costs, deliver best value to the nation for the spectrum, bring transparency to the process, and ensure open and effective competition. This makes spectrum auctions the preferred spectrum award system, where the demand exceeds the available spectrum supply. Thus CITC propose to use spectrum auctions to award fixed and mobile spectrum.

3.6 **Auction Methods**

3.6.1 Spectrum auction methods include single-lot auction systems including English, sealed-bid, clock and Dutch auctions, and multiple-lot methods, such as sequential, simultaneous and one-price systems and the simultaneous ascending multiple auction method

<u>Considerations</u>

3.6.2 The CITC is considering the use of the simultaneous ascending multiple auction method in which a number of similar spectrum lots are simultaneously offered to bidders.

3.6.3 Bidding in simultaneous ascending multiple auctions is held over multiple rounds where all lots are auctioned simultaneously. The method permits price discovery, limiting the potential for a "winner's curse", with highest bids announced at the end of each round. Bidding closes when no new valid bids are received on any lot. Rules aim to prevent participants from colluding, which may lead to decreased competition, and to ensure the auction is not drawn out over an unreasonable length of time. Auctioning spectrum in blocks with a maximum per-service provider cap permits the market to determine the most efficient assignment of spectrum.

3.7 Geographic Area Based Approach

3.7.1 The CITC is planning to award spectrum for broadband wireless access (BWA) spectrum this year and is considering the release of technology-neutral spectrum in geographic areas based on projected demand using a tiered High, Medium and Low demand geographic area-based approach.

Considerations

3.7.2 The greatest spectrum may be made available in High demand areas, such as areas in and around major cities, with less spectrum made available in remaining areas in order to maximize spectrum use and efficiency. A modest number of licenses may be awarded by auction in the High demand areas. More licenses may be made available on a First Come First Served basis in the other areas at reduced cost, with the lowest costs applied to Low demand areas, to further encourage spectrum use and active deployments.

Attachment 5

Unbundling

1   INTRODUCTION

1.1   Unbundling allows one licensed FBP to lease facilities from another licensed FBP, i.e. incumbent, to offer ICT services. This provides a means for the new FBPs to enter the market before the completion of the planned rollout of their own facilities.

1.2   Unbundling has been implemented in many countries since the late 1990s as countries open their ICT sector. ICT regulators in many jurisdictions use it as a way to encourage competitive at the retail level.

1.3   The CITC currently has Unbundling policies that cover Data Service Providers. In view of the new ICT licenses to be awarded in the KSA, the CITC is reviewing its overall Unbundling policies.

2 DEFINITIONS AND DESCRIPTIONS

2.1 Unbundling, in telecommunications, refers to the obligations that regulators impose on a facilities based provider to sell the functionalities of its network elements to FBPs. Unbundling may involve the physical installation of the FBPs' equipments at the incumbent's facilities (co-location) or the leasing of network elements from the incumbent. The following forms of unbundling have been implemented in other countries in the past decade:

2.2 Unbundled network elements (UNE) – where multiple elements of the incumbent's network are made available to FBPs.

2.2.1 Local loop unbundling (LLU) – the copper twisted pairs that run from incumbent's Main Distribution Frame (MDF) to the end-customers' premises are made available to FBPs. LLU requires the co-location of the FBPs' equipment at the incumbent's facilities. Several forms of LLU have been adopted in various countries:

2.2.1.1 Full unbundled access – FBPs lease copper pairs from the incumbent. The FBPs take control of the copper pairs and can provide both voice and data services over all frequencies supported by the copper pairs.

2.2.1.2 Line sharing – FBPs use only the non-voice frequency of the copper pairs to provide ADSL services. The incumbent continues to provide voice telephony service, while the FBPs deliver high-speed data services over the same local loop, using the higher part of the frequency spectrum.

2.2.1.3 Sub-loop unbundling – this refers to the partial unbundling of the local loop between the MDF and the termination points at the client premises. The FBPs can connect at various physical access points in the sub-loop but the most common connection point is the Outdoor Cabinet.

2.2.2 Wholesale Bitstream Access – the incumbent leases the capacity to carry the data stream from the end customers' premises to the FBPs' data networks. Co-location of equipment is not required for this option.

3 ISSUES, OPTIONS AND CONSIDERATIONS

3.1 Unbundling Obligations

3.1.1 In view of the new fixed licenses to be awarded, the CITC is considering whether to mandate the incumbent to unbundle its network elements for new facility based providers (FBPs)

Considerations

3.1.2 As mentioned publicly in the past, the CITC's overarching policy objective includes increasing teledensity in the Kingdom, particularly broadband penetration. Further, in order to ensure affordable access to communications services to all segments of the population, the CITC wishes to encourage direct investment in the access network and promote access competition. Although not having access to the incumbent's network would, from that point of view, encourage direct investment in networks by new FBPs, the CITC, however, accepts that there is a requirement to establish a level playing field in the short term as new FBPs rollout their networks, and hence there may exist a genuine need to impose some Unbundling obligations on the incumbent.

3.2 Form of Unbundling

3.2.1 Which form(s) of Unbundling should the CITC mandate the incumbent to provide, if at all?

3.2.1.1 Unbundled Network Elements (UNE)

3.2.1.2 Local Loop Unbundling (Full Unbundled Access)

3.2.1.3 Local Loop Unbundling (Line Sharing)

3.2.1.4 Wholesale Bitstream Access

Considerations

3.2.2 While various countries have implemented Unbundling in multiple forms, success has so far been somewhat limited due to complexities of implementation. In Decision No. (52/1425), dated 05/08/1425H, the CITC has mandated Wholesale Bitstream Access and Line Sharing for Data Service Providers, and hence does not foresee any significant increase in implementation complexity if the same is extended to the new fixed FBPs

3.2.3 Unbundled Network Elements (UNE) is likely to lead to a decrease in overall network investments as the incumbent will cut back on network investment as it would not be protected from the new FBPs. Full unbundled access would decrease incentives for the new FBPs to invest in alternative local loop technologies such as Broadband Wireless Access or FTTx.

3.2.4 The CITC is therefore of the view that the incumbent should be mandated to provide Wholesale Bitstream Access and Line Sharing, for both voice and data, for all new fixed FBPs.

3.3 **Sunset Clause**

3.3.1 In some countries that implemented Unbundling, a time limit on the Unbundling obligations was imposed, which is commonly known as the sunset clause. This allows FBPs to leverage the incumbent's network in the short term, while encouraging them to invest in their own networks for the long term.

3.3.2 The CITC is considering whether there should be a sunset clause on the Unbundling obligations imposed on the incumbent, and the duration of any such sunset clause.

Considerations

3.3.3 Given the CITC objective to increase teledensity and to attract investments in the fixed services sector, the CITC is of the view that that a sunset clause should be imposed. Allowing access to the incumbent's network for an unlimited period of time would remove a strong incentive for new fixed line entrants to build their own networks. Other countries have imposed time limits with this consideration in mind.

3.3.4 In CITC's view, Unbundling with a sunset clause aligns well with its stated objectives for the new fixed services licensing. If such a clause is imposed, the length of time during which the sunset clause would be valid would need to be tied to the network rollout plans of the new licensees to give them enough time to rollout their own infrastructure.

3.4 **Pricing model**

3.4.1 The incumbent has to be fairly compensated for Unbundling its facilities and services. There are several pricing models available for Unbundling:

3.4.1.1 Long Run Incremental Cost (LRIC) based pricing – This method seeks to determine the incremental cost of providing one extra unit of the relevant service.

3.4.1.2 Retail Minus – The price of the unbundled element or service is set based on the retail price for the equivalent product or service minus a certain percentage.

3.4.1.3 Benchmarking – Direct comparison of the price of similar products and services offered in other countries with equivalent characteristics (geography, economy etc).

3.4.2 Which pricing method should the CITC impose on the incumbent to use in pricing its unbundled products and services? If the LRIC method is used, it may take about 2 years for the LRIC model to be developed, so what pricing model should be used in the interim?

<u>Considerations</u>

3.4.3 The CITC intends to require the incumbent to use the LRIC model to price its interconnection services. This model is widely accepted as being most appropriate, and in line with other International best practices. It is, however, complex to develop and implement. In the interim the CITC is considering the use of benchmarking and Retail Minus.

Attachment 6

Carrier Selection

1   INTRODUCTION

1.1   "Carrier Selection" (CS) is a mechanism which allows consumers directly connected to the network of one FBP to proactively select an alternative FBP for voice telephony services

1.2   In the absence of a form of indirect access, new entrants would have access to only the limited set of customers to which they are able to provide direct connections through construction of a new access network or through local loop unbundling.

1.3   Carrier Selection (CS) is one possible regulatory tool to increase the attractiveness of the market for new entrants, by allowing new entrants access to customers and thus capture a base of customers while they are rolling out their networks

1.4   CS can increase competition and consumer choice in various market segments. The benefits of CS are as follows:

1.4.1   Increased customer choice; customers can choose to use the competitor's service as easily as they would use the incumbent's

1.4.2   Cheaper prices / higher service quality; since a customer's ease of migration increases, providers are pressured to attract new and existing customers through lower prices and better service. Since providers are unable to identify which customers are most likely to migrate, the previously stated benefits of CS will be available to all customers

2 DEFINITIONS AND DESCRIPTIONS

2.1 There are two main schemes for implementing CS: Call by Call Carrier Selection (CBC CS) and Carrier Pre-Selection (CPS). In this paper CS refers to Carrier Selection in general (i.e. both CBC CS and CPS), while Call by Call and Carrier Pre Selection are termed CBC CS and CPS respectively.

2.2 CPS allows customers to select, in advance, alternative FBPs to carry their calls without having to dial a prefix or install any special equipment at their premises. CBC CS allows customers to override their pre selected carrier on a call by call basis by dialing the Carrier Identification Code (CIC) of the alternative provider. Thus CBC CS is normally an interim step taken before the introduction of CPS. When CPS is available with CBC CS, it is known as full blown CS.

3 ISSUES, OPTIONS AND CONSIDERATIONS

3.1 Necessity for CS

3.1.1 Carrier selection is a regulatory tool that is used to achieve certain objectives. When and in what form it should be implemented thus depends very much on the level of alignment between what CS can achieve and overall policy objectives. The necessity for CS can be determined from the level of alignment between CS and the CITC's policy objectives.

Considerations

3.1.2 CS can promote competition in specific markets but may also hamper infrastructure investments if imposed on all carriers. It is, however, an important regulatory tool to facilitate competition. With the opening of the fixed services market in the KSA, the CITC considers that implementation of some form of CS may bring immediate consumer benefit in the form of lower prices.

3.2 Approaches to CS Implementation

3.2.1 The selected approach should be aligned with overall CS policy objectives and will impact customer choice, level of competition, implementation costs and timings. There are four possible approaches for CS implementation:

3.2.1.1 Call by Call Carrier Selection (CBC CS) with 2 stage dialing: The user calls a special service access code after which the dialed number is entered with a special authentication code i.e. similar to calling card services.

3.2.1.2 Call by Call Carrier Selection (CBC CS) with 1 stage dialing with default carrier i.e. no dialing parity or unequal access: A default carrier (usually the local access network FBP) is assigned with the possibility of override by the user on a call by call basis. There is no dialing parity as additional CIC codes need to be dialed for alternative FBPs.

3.2.1.3 Call by Call Carrier Selection (CBC CS) with 1 stage dialing and no default i.e. dialing parity or equal access: Similar to b) above, but there is no default carrier and a CIC needs to be dialed for all CBC CS call services.

3.2.1.4 Carrier Pre-Selection (CPS) with CBC override: The user chooses his desired FBP beforehand and all calls are automatically routed through the pre-selected FBP. The user can also override his pre-selected choice on a call by call basis using a CIC. This is usually known as 'full blown CS'.

Considerations

3.2.2 CPS is relatively more complex than CBC CS and could take longer to implement. The CITC's preliminary view is that implementation of CS should follow a phased

approach, with CBC CS implemented first. This would facilitate both consumer choice and competition as soon as possible.

3.3 Scope of CS Services

3.3.1 The CITC is considering which call types should be included under CS, and which FBPs are obliged to provide CS to their Subscribers and the extent of customer choice, in terms of call types, to be allowed. The decisions taken here will impact the implementation and complexity of CS and the extent of customer choice, in terms of call types, to be allowed. The options available for the CITC to consider include:

3.3.1.1 Only Fixed originating call services i.e. offer CS for National Long Distance (NLD), International Long Distance (ILD) and/or Fixed to Mobile.

3.3.1.2 Inclusion of Mobile originating call services i.e. Fixed originating call services + Mobile to Fixed calls (e.g. ILD calls from Mobile).

3.3.1.3 Inclusion of IP originating call services i.e. Fixed and mobile originating call services + some combination of IP originating calls.

Considerations

3.3.2 The scope of CS services should be guided by the degree of competition needed in the respective markets/services. Given the current market situation, the CITC is considering requiring implementation of a form of CS for fixed and mobile originating call services (i.e. Options 3.3.1.1 and 3.3.1.2), starting with International Long Distance (ILD), followed by National Long Distance (NLD) and subsequently Fixed to Mobile and Mobile to Fixed, depending on the then market situation at that time.

3.3.3 The CITC is of the view that a form of CS for IP originating call services (i.e. Option 3.3.1.3) should be considered later in line with prevailing market conditions.

3.4 CS Applicability

3.4.1 The question of which FBPs should be mandated to provide CS to their subscribers needs to be addressed. The options available for the CITC to consider include:

3.4.1.1 Only Dominant FBPs: Only Dominant FBPs are required to provide CS. All other FBPs do not have to provide CS for their subscribers but may do so if they wish.

3.4.1.2 All FBPs: All FBPs who offer call services that are under CS, including new entrants, are required to provide CS. However, the regulator still has the authority to exempt certain FBPs from this requirement, subject to a pre-determined and approved set of guidelines.

Considerations

3.4.2   At this stage of the market evolution, the CITC is keen to attract new players in the fixed services market segment. Imposing CS requirements on new entrants at an early stage may handicap entry attractiveness and infrastructure investments. In CITC's preliminary view, imposing CS requirements on Dominant FBP(s) may increase consumer choice while also improving the business case of the new entrants.

3.5   Single/Multi-basket Approach

3.5.1   The CITC is considering whether to allow a single-basket approach, where customers choose one pre-selected FBP who provides all CPS call services or a multi-basket approach where customers can choose a different pre-selected operator for each pre-selectable service or a combination of the two.

Considerations

3.5.2   The multi-basket approach affords greater customer choice but typically incurs significantly more complexity and costs whereas the opposite is true for the single-basket approach. The CITC is of the preliminary view that the advantages of the multi basket approach in stimulating competition and allowing greater consumer choice in specific markets (e.g. ILD) outweigh the accompanying additional implementation complexity.

3.6   Technical Issues

3.6.1   The main CS related technical issues revolve around switching requirements. CBC CS typically has fewer requirements and thus can be rolled out faster. For CPS, depending on the scope of services to be provided, a new Industry Working Group (IWG) could be formed to handle all CS related issues, including technical issues.

3.7   Consumer and Operational Issues

3.7.1   The implementation of CS, especially CPS, brings about various consumer and operational issues. Consumer issues become increasingly important as competition for new customers intensifies and typically includes unauthorized changes in pre-selected carriers (slamming) and delays in changes or activations. Main operational issues include: order handling, complaint handling and inter-FBP billing. To work on resolving these issues and to develop a consumer protection code, the CITC is considering the following:

3.7.1.1 The IWG (as referenced in Section 3.6.1) should handle all consumer related issues and operational processes, including the development of a consumer protection code.

3.7.1.2 Seek a third party provider to develop and handle all consumer and operational issues.

3.7.2 The CITC is of the preliminary view that the formation of an Industry Working Group (IWG), with both consumer and technical working groups, would be useful in order to achieve a consensus on operational issues. The objective of this group would be to involve all key stakeholders in the implementation process and to develop guidelines for consumer protection and processes for inter-FBP issues.

3.8 Need for Balloting

3.8.1 Balloting refers to the process of actively soliciting Subscribers' opinions on which FBP they wish to pre-select. It can be done in various ways e.g. through normal monthly billings, a separate letter etc. The concept is only applicable to CPS. The CITC is considering the following options:

3.8.1.1 Use of some form of ballot to determine initial customer pre-select choice; or

3.8.1.2 Let individual FBPs conduct their own marketing for subscriber acquisition.

Considerations

3.8.2 International experience has shown that balloting was normally most effective where only one new competitor was being introduced to achieve and maintain a duopoly situation. Balloting may also be unfair for new entrants who enter the market after the balloting phase. The CITC therefore considers that letting new entrants conduct their own subscriber acquisition marketing activities may be fairer for all new entrants.

3.9 Cost Apportionment and Recovery

3.9.1 Costs for implementation of CS can be divided into the three categories:

3.9.1.1 System set up: Costs associated with the one time set up of CS capabilities, mostly by the Dominant FBPs, covering changes related to routing, billing, software/ switches and modifying any other supporting systems. This should include any system maintenance costs.

3.9.1.2 Per FBP set up: Costs associated in enabling CS for each FBP, usually covering data management and setting up of commercial agreements.

3.9.1.3 Per line set up: Cost associated with the administrative set up for individual customer lines.

3.9.2 Cost apportionment and recovery typically follow standard guiding principles of cost causation, cost minimization, distribution of benefit, effective competition, reciprocity and symmetry, practicality, and relevant cost, and are important in ensuring fair competition. Cost recovery options include:

3.9.2.1 Up front recovery: The eligible incremental set-up costs are estimated (usually by the dominant FBP with approval from the regulator) and apportioned between current existing CS FBPs (usually by some measure like market share). These costs are paid upfront to the dominant FBP.

3.9.2.2 Installments: A cost recovery period (e.g. 5 years) is determined and the eligible incremental set-up costs and per minute surcharge are estimated (usually by the dominant FBP with approval from the regulator). These costs are paid to the dominant FBP based on some measure (e.g. call minutes) up till the end of the designated cost recovery period. This is sometimes known as spread out recovery.

<u>Considerations</u>

3.9.3   The CITC's preliminary view is that the system set-up costs, which constitute the majority of costs and usually incurred by the incumbent, may be apportioned between all CS FBPs and recovered on an installment basis across all relevant CS call type minutes using a per minute surcharge. Further, only incremental costs that have been incurred for the setup of providing CS facilities will be considered eligible for cost recovery. Per FBP and per line set up costs will be borne by the respective CS FBPs, based on the principle of cost causation. Any customer surcharges that CS FBPs wish to impose should remain a commercial decision.

3.10   **Timing**

3.10.1 International best practices indicate introduction of CBC CS within one year of the introduction of fixed services competition, followed by CPS within two years. The CITC is of the view that an Industry Working Group should be formed within one month of issuance of a CITC policy decision in order to implement CBS CS within one year and CPS within two years.

3.10.2 These dates should also be subject to consideration by the proposed Industry Working Group and when the new fixed FBPs are operational.

Attachment 7

Local Number Portability

1   INTRODUCTION

1.5   The Telecommunications Act (the Act), the Telecommunications Bylaw (the Bylaw) and the CITC Ordinance (the Ordinance) include provisions with respect to Number Portability. Article 27 of the Act states: "The service providers shall ensure the transfer of number according to the user requirements". The Bylaw states the associated procedures and conditions and Article (87) of the Bylaw sets out the responsibilities of the Communications and Information Technology Commission (CITC) and the service providers.

1.6   Mobile Number Portability (MNP) is currently in its final stages of implementation. Local Number Portability (LNP), as outlined in Phase 2 of CITC's Mobile Number Portability Policy and Guidelines, must now be considered as part of the licensing process under the Regulatory Framework for the Licensing of Fixed and Mobile Services.

1.7   The CITC intends to promote competition in the fixed services market by ensuring that all users in the Kingdom are able to keep their existing telephone numbers when changing their Locations or fixed services FBPs.

2   DEFINITIONS AND DESCRIPTIONS

2.1   Number Portability (NP) is a facility whereby telephone customers can keep their telephone number(s) when changing from one network FBP or location or service type to another. Number portability is increasingly demanded by customers and new entrants, and the implementation of NP is mandated by the Telecommunications Act and its Bylaws.

2.2   Number portability can be implemented within and between both fixed and mobile networks. Local Number Portability (LNP) normally refers to number portability in fixed services networks, while the term Mobile Number Portability (MNP) refers solely to the mobile services network equivalent.

2.3   There are three types of number portability, namely FBP portability, service portability and location portability, although service portability and location portability relate only to fixed services networks.

2.3.1   Location Portability enables an end user to retain the same (fixed) telephone number, without impairment of quality, reliability or convenience when moving from one physical geographic location to another. The new location may be outside their original local exchange area but may be restricted to their local calling or charging group area.

2.3.2   Service Provider Portability enables the end user to retain the same number when changing from one FBP to another. This can apply to both "geographical" and non-geographical" specific numbers. Service provider portability has the most significant impact on competition and is applicable to both fixed and mobile services subscribers.

2.3.3   Service Portability is the ability for the user to retain their existing telephone number without impairment of quality, reliability or convenience when changing from one type of service to another, e.g. from PSTN to ISDN.

2.4   Local number Portability (LNP) is the ability for an end user to retain the same geographic E.164 international public telecommunication number, without service impairment, when changing from one FBP to another without changing their location, or when moving from one physical location to another within the local calling Area (LCA) and without changing the nature of the service offered.

3 ISSUES, OPTIONS AND CONSIDERATIONS

3.1 This attachment addresses Local Number Portability (LNP) Policy issues in accordance with the Telecommunication Act and its Bylaw.

3.2 LNP and CITC's Objectives

3.2.1 CITC's overarching objectives are to increase teledensity and promote competition in the fixed and mobile services. The CITC also has specific objectives for number portability within the KSA. These are stated in the Mobile Number Portability Policy and Guidelines (See: www.citc.gov.sa), and mandate that, in the longer term, number portability will be extended to cover basic telephone service.

3.2.1.1 In addition to the identification of the end user, the CITC also wishes to maintain the ability of the user to associate the telephone number he is calling with the tariff of the call, the general geographic location of the number, and the particular service associated with the number.

3.2.1.2 LNP is intended to improve overall customer satisfaction by 1) eliminating the inconvenience caused by changes in the telephone number(s) caused by changing a FBP and 2) reduce the cases requiring telephone number changes.

Considerations

3.2.2 In order to encourage competition between FBPs, it is important to remove major barriers associated with changing FBP. As a number change is seen as a significant exit barrier towards changing FBPs, LNP will facilitate ease of switching and promote greater competition. LNP should also bring the benefits of greater service innovation to customers. The implementation of LNP is therefore in line with both overarching and specific CITC objectives.

3.3 Types of Local Number Portability

3.3.1 There are three types of local number portability, namely location portability, service provider portability and service portability.

3.4 Location Portability

3.4.1 There are three possible options for location portability:

3.4.1.1 Within the local exchange area,

3.4.1.2 Local call (charging) area (LCA)

3.4.1.3 Anywhere within the KSA.

Considerations

3.4.2 As a local exchange area consists of a local exchange, with one or more switching units, which are directly connected to customers, number portability can easily be provided within a local exchange area with no significant technical issues.

3.4.3 A local calling area generally consists of multiple local exchanges where there is a uniform rate charge, i.e. local call charge, within the LCA. Number portability within a LCA has no issues from a billing perspective.

3.4.4 National location portability crosses not only local call area boundaries but also numbering zone boundaries. Notwithstanding the technical considerations, in order to maintain the association between a telephone number and its location, there is a basic prerequisite for full national location number portability, i.e. a uniform charging rate for all national calls within the KSA. This situation does not currently prevail in the KSA.

3.4.5 Experience from other countries indicates that location portability within a local calling area is an effective way to implement LNP. CITC is considering this direction although national location portability could be a future consideration.

3.5 Service Provider Portability

3.5.1 Service provider portability enables customer to retain their existing telephone number when moving between FBPs, but not changing location or service type.

Considerations

3.5.2 Service provider portability is seen to offer advantages to customers, promote competition between FBPs and help new FBPs gain market share. This can:

3.5.2.1 Remove a significant obstacle to customers wishing to change FBPs

3.5.2.2 Fewer incorrectly dialed numbers

3.5.2.3 Encourage FBPs to retain customers through innovation, improved quality of service and reduced prices, while avoiding for customers the administrative inconvenience and expense of having to advise all who call them of their new numbers as well as having to update business cards, letterhead and company advertisements.

3.5.2.4 Motivate incumbent FBPs to increase the efficiency of their networks, lower the cost of service to retain their existing customers, and enhance competition with a greater variety of products and services.

3.5.2.5 Lead to a more efficient use of numbering resources.

3.6 Service Portability

3.6.1 Two variations of service portability have been identified:

3.6.1.1 Number portability when changing services between fixed and mobile services.

3.6.1.2 Number portability when changing service type within the fixed network, i.e. Direct Exchange Line (DEL) to Integrated Services Digital Network (ISDN).

Considerations

3.6.2 The CITC requires that telephone numbers indicate certain information as noted above. Service portability does not support this objective. In addition, little evidence can be found to support the need for service portability in other countries. So far service portability between fixed and mobile services is provided in only one country, but confined to within specific geographic areas.

3.7 Technical Issues

3.7.1 There are two basic technical options for implementing local number portability for fixed service networks, namely simple call forwarding or Intelligent Network (IN). A Signaling Relay Function (SRF) solution has been adopted for MNP in the KSA, but this is not included as a third option as it is not suitable for fixed networks.

Considerations

3.7.2 Benchmarked countries have considered both options and although IN is seen as the preferred longer term solution, many have used Call Forwarding, or a variation of call forwarding, as an interim solution in order to expedite LNP implementation.

3.7.3 Call forwarding provides a quick means of implementation, but results in an inefficient use of telephone numbers and provides little flexibility for future number portability enhancements, e.g. service portability.

3.7.4 An Intelligent Network (IN) solution is initially more complex and expensive to implement, but provides the better long term options. Experience of other countries indicates that IN is generally the preferred long term solution.

3.7.5 The choice of technical solution is normally left for agreement between the FBPs with regulator intervention only necessary if agreement cannot be reached. However, the CITC is considering mandating implementation of the long term solution, i.e. the IN-based solution for LNP, and with no interim call-forwarding solution. Agreement between FBPs must be reached regarding the detailed technical implementation in their networks. Any such agreement must be approved by the CITC.

3.8 Database Responsibility

3.8.1 Where an IN solution is to be implemented, it is necessary to identify responsibility for the establishment and management of the necessary database(s). This may require either a centralized or distributed database. The NP database can be provided by one or all of the FBPs; an independent third party; or by the Regulator

Considerations

3.8.2 In addition to jointly determining the technical solution to be adopted for LNP, FBPs are also expected to determine who is responsible for the implementation, maintenance and management of the database. Where distributed databases have been implemented, individual FBPs should be responsible for their own individual database. Where a centralized database solution has been adopted, this could be provided by a third party, as is the case for MNP in the KSA.

3.8.3 The CITC is in favor of a centralized data base solution (3rd party solution). A Clearinghouse (NPC) solution which has already been implemented for MNP, with the database managed by CITC, could also be considered for LNP. This solution provides a single database serving as the repository for all ported numbers in the country. FBPs can access this platform via the internet using HTTPS with a graphic user interface (GUI).

3.9 Costs Recovery

3.9.1 There are three basic types of cost in a LNP environment to be considered when formulating charging principles for inter-FBP number portability. These are system set-up costs; additional conveyance costs; and administrative costs.

Considerations

3.9.2 Experience from other countries indicates that set-up and conveyance costs are generally borne by the FBPs.

3.9.3 Administration charges are typically recovered from customers. This will also be the case for MNP in the KSA. The recipient service provider shall compensate the donor for the administrative cost incurred due to number porting. This is the only cost the Recipient may collect from the customer, unless the recipient service provider elects to bear the cost on behalf of the customer.

3.9.4 Charges for LNP should be established based on a form of Long Run Incremental Cost (LRIC) methodology and allocated between parties based on the cost principles (as stated in the Mobile Number Portability Policy and Guidelines (See: www.citc.gov.sa)) of; cost causation, cost minimization, distribution of benefit, effective competition, reciprocity and symmetry, practicality, and relevant cost. These costing principles are intended to form the basis for determining inter-service provider charges.

3.9.5 The CITC objective is to eventually adopt the LRIC approach for LNP charges. However, it is recognized that such an approach may not be practical in the short term. Thus, for the development of LNP charges, consideration may be given to other approaches such as a benchmarking.

3.10 Fixed Mobile Convergence

3.10.1 There is growing interest in the convergence of fixed and mobile services. This could generate a need for service portability between fixed and mobile networks.

Considerations

3.10.2 Fixed services network numbering in the KSA is based on an 8 digit numbering plan with 7 geographical numbering zones.

3.10.3 Mobile service call charges are not distance sensitive and may be termed as flat rated. In comparison, the fixed local service call charge is fixed within each of the 53 local call areas (LCAs) and may vary depending on local area characteristics. The National Long Distance (LND) call charges are distance sensitive based on distance between the originating and terminating exchanges, e.g. less than or greater than 200km.

3.10.4 Since the CITC requires that telephone numbers communicate certain information including the tariff associated with making a call to a particular number, the general geographic location of the number and the particular service associated with the number, it would be necessary to implement full national LNP within the fixed network prior to implementation of Fixed – Mobile Number Portability (FMNP). This in turn would require application of uniform rate charging for all calls within the KSA.

3.10.5 As the introduction of uniform rate charging in the fixed network is not likely to happen in the near future, it is not viewed as necessary to consider FMNP presenting the short term.

3.11 Future Technologies

3.11.1 The Internet and IP based networks are increasingly being deployed for provision of communications services. Some incumbent FBPs are already starting to migrate, or overlay their existing TDM circuit switched networks with Next Generation Networks (NGN) which are IP based.

Considerations

3.11.2 The emergence of IP Telephony Services/VoIP presents some unique challenges for National Regulatory Agencies (NRAs) which traditionally classify IP based services as data services rather than voice services. On the other hand, VoIP also opens up new ways for Regulators to introduce fixed services competition into the market.

3.11.3 Several types of IP Telephony services have emerged across the world. Please see the policy paper on IP telephony services/VoIP (Attachment #3)

3.11.4 For IP Telephony services where end customers are issued with an E.164 telephone number, either as an integrated PSTN number or using a specific access level, it is CITC's preliminary view that the customer should be treated like any other fixed services customer. The same LNP obligations should therefore apply to all network FBPs offering voice service using E.164 numbers, irrespective of the technology used for call delivery.

3.12 **LNP Implementation Timeframe**

3.12.1 It is important that LNP be implemented in a very efficient and timely manner according to the best practices and in line with issuance of new fixed services license(s), however, adequate time must be allowed for technical and commercial arrangements to be agreed between network FBPs.

Considerations

3.12.2 Experience of other countries indicates that most required a number of years from an initial public consultation to LNP implementation. LNP in certain other countries, however, was implemented almost 10 years ago and is not directly comparable with the situation today, given the availability of "off-the-shelf" Number Portability technical solutions. It is expected that LNP could be implemented in the KSA within one year following this public consultation process.

3.12.3 To ensure that the adopted porting processes serve the purpose of efficiency and simplicity, CITC is considering a one-stop shop porting process.

Attachment 8

Quality of Service (QoS)

1 INTRODUCTION

1.8 The current CITC Bylaw requires Universal Service Providers to report on Quality of Service (QoS) indicators and standards approved by the CITC. The CITC may also decide to apply these requirements to Dominant Service Providers.

1.9 The CITC has issued Decision No. (24/1424) dated 13/10/1424 defining the indicators and standards for consumer QoS imposed on the incumbent Saudi Telecommunication Company

1.10 QoS is a form of direct regulation that is used for consumer protection and information. It can also be used as a tool to stimulate competition in the market.

1.11 Compliance with QoS indicators has implications on FBPs' cost, investments and operations. The CITC therefore needs to review its QoS policies in view of the new fixed and mobile services licensing program.

2   DEFINITIONS AND DESCRIPTIONS

2.1   "Quality of service" (QoS) in the context of licensing refers to the systematic measurement of the reliability and usability of ICT networks or services.

2.2   The QoS requirements may differ between services provided to end users, "consumer QoS", and services provided to other FBPs, "wholesale QoS".

2.3   This paper deals specifically with QoS considerations for end users.

3 ISSUES, OPTIONS AND CONSIDERATIONS

3.1 Necessity for Quality of Service Regulation

3.1.1 QoS is a regulatory tool that is used to achieve certain objectives. The three basic types of QoS regulatory options which the CITC could consider are:

3.1.1.1 Direct regulation: The regulator sets the QoS indicators and standards, details measurement methods and procedures and obliges FBPs to comply. There is little or no industry involvement other than to collect the required information.

3.1.1.2 Co-regulation: The regulator defines the high level indicators, but the details are defined by an industry body set up or facilitated by the regulator. This body is backed up by a minimum level of regulation to ensure co-operation.

3.1.1.3 Self regulation: No QoS indicators are imposed. FBPs take voluntary co-operative action to develop, agree and enforce guidelines on to implement QoS standards and measurements. The regulator would only intervene to resolve conflicts within the industry.

Considerations

3.1.2 In line with international best practices, the CITC is committed to ensure consumer QoS standards are met in the KSA ICT market. Since it will take time for the KSA ICT market to reach full, efficient competition and there is currently a perceived need to improve quality in certain aspects of some services, some QoS regulation may be needed.

3.1.3 In a purely competitive market, customers can determine whether to switch from one FBP to another based on their level of satisfaction with their service. QoS will be one of their criteria in making that determination. Where a monopoly exists or where competition is not well established, the CITC may have to protect consumer interests by imposing standards on dominant FBPs. However, an important factor in evaluating QoS policy options is to ensure that the costs incurred by FBPs in complying with the regulations do not outweigh the benefits. In CITC's view, regulation of QoS standards should only be applied when there is a proven need and benefits can be defined.

3.2 Compliance with QoS Regulation

3.2.1 Who should comply with QoS regulations and how should they be applied?

3.2.1.1 All FBPs are treated equally. Reporting on QoS indicators is mandatory for all services providers.

3.2.1.2 Reporting on QoS indicators is mandatory for all FBPs that fulfill certain minimum conditions, i.e. revenues, number of customers, etc. An example (with a large threshold) is where certain indicators are only imposed on FBPs having Significant Market Power (SMP).

3.2.1.3 Different FBPs have to comply with different QoS indicators.

<u>Considerations</u>

3.2.2 The CITC considers that reporting on pre-established consumer QoS indicators should be imposed on all FBPs offering services to end-users and QoS needs to be measured using a common methodology. An exemption may be considered for the first 12 months after commercial launch of a service.

3.3 **Services Subject to QoS**

3.3.1 Which type of services should be subjected to QoS regulation? Should all services offered in the KSA market be subjected to QoS regulation or would some services be excluded?

<u>Considerations</u>

3.3.2 In CITC's view both fixed and mobile services require some form of QoS regulation, however the policy should distinguish between monopoly and competitive services in terms of the degree of QoS regulation. In doing so, the policy also needs to consider Next Generation Network (NGN) communication services (e.g. IP Telephony services)

3.4 **QoS Indicators and Reporting**

3.4.1 The CITC is considering which QoS indicators should apply and what the reporting requirements should be.

<u>Considerations</u>

3.4.2 Most regulators only impose a reporting requirement. The CITC considers that for other than monopoly service, only a reporting requirement would be sufficient. The CITC may initiate a dialogue with FBPs if it feels a certain level of reported QoS is insufficient, impose targets and eventually sanctions for non compliance, if necessary.

3.4.3 The indicators and standards already set by the CITC for fixed services (i.e. PSTN and data) would remain applicable as long as there is a monopoly in the KSA market. In CITC's view the targets would be replaced by a reporting requirement as soon as competition has emerged with national coverage.

3.4.4 QoS standards for mobile services are currently imposed by the CITC. The CITC is considering whether only reporting should be required given the level of competition in the market

3.4.5 The CITC will rely on international standards (i.e. European Telecommunications Standard Institute - ETSI, ITU, etc.) and benchmarking for the exact definition and the measurement methods of the standards and indicators.

3.5   **Frequency of Reporting**

3.5.1   Options for the periodicity of reporting of QoS performance are time based, e.g. monthly, quarterly, biannually, annually etc. The reported results need to be communicated to the public. Options for publication channels include but are not limited to websites (independent, regulator or FBP), advertising (newspaper, TV, etc.), brochures provided in retail outlets or information sent directly to customers.

Considerations

3.5.2   The CITC considers that bi-annual reporting on customer satisfaction and quarterly reporting on other indicators would be appropriate. The QoS indicators and results would be published on the FBP's website. The use of other channels to inform the KSA consumer could also be used if the need arises.

3.6   **Audit of QoS**

3.6.1   QoS measurements may need to be audited. The CITC is considering appropriate methodologies to conduct these audits. Options include:

3.6.1.1 An audit of the procedures and processes put in place to collect the data and to generate the results and the data gathered to produce the reported results (either carried out by the CITC itself or a qualified auditor)

3.6.1.2 Measuring a selected indicator on a sample basis to check whether the reported result corresponds with the measured sample

3.6.1.3 Surveying consumers about their experience on certain aspects of QoS

3.6.1.4 Analysis of customer complaints

Considerations

3.6.2   The CITC may engage an independent third party (an auditor) to periodically carry out an audit of the reported measurements. The CITC invites comments on the appropriate methodologies for auditing the QoS measurements.

3.7   **Enforcement of QoS Regulation**

3.7.1   There are different options available for enforcement of QoS regulation, including:

3.7.1.1 Encouragement:

3.7.1.1.1   Starting up a dialogue with the FBPs to encourage them to improve their QoS

3.7.1.1.2   Doing nothing, the CITC relies on the power of publicity and competition to drive the FBP to correct its performance

3.7.1.2 Financial penalties: Imposing a fine (payable to the regulator, the government, a consumer forum or payable to the consumer)

<u>Considerations</u>

3.7.2 If a FBP does not comply, the CITC will first rely on the power of publicity and dialogue with the FBP. If there is consistent non compliance, then a fine may be imposed, in accordance with the Telecommunications Bylaw.

Appendix I

Template for Providing Comments

Policy Name: *(insert attachment title)*	
Attachment Number: *(insert attachment number)*	
Paragraph Number	**Comments**

Appendix II

Glossary of Terms

Glossary of Terms

CBC CS	Call by Call Carrier Selection
CIC	Carrier Identification Code
CITC	Communications and Information Technology Commission
CLI	Calling Line Identification
CPS	Carrier Pre-Selection
CS	Carrier Selection
DSL	Digital Subscriber Line
ETSI	European Telecommunications Standard Institute
FBP	Facilities Based Provider
GUI	Graphical User Interface
HTTPS	Hypertext Transfer Protocol over Secure Socket Layer
ILD	International Long Distance
IN	Intelligent Network
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
ITU	International Telecommunication Union
KSA	Kingdom of Saudi Arabia
LCA	Local Calling Area
LLU	Local Loop Unbundling
LNP	Local Number Portability
LRAIC	Long Run Average Incremental Cost
LRIC	Long Run Incremental Cost
MNP	Mobile Number Portability
MVNO	Mobile Virtual Network Operator
NGN	Next Generation Networks
NLD	National Long Distance
NP	Number Portability
NPC	Number Portability Clearinghouse
PLMN	Public Land Mobile Network

PSTN	Public Switch Telephone Networks
QoS	Quality of Service
RIO	Reference Interconnection Offer
SBP	Service Based Provider
SLA	Service Level Agreement
SMP	Significant Market Power
STC	Saudi Telecom Company
UNE	Unbundled Network Element
USF	Universal Service Fund
VoIP	Voice Over Internet Protocol
WTO	World Trade Organization