



INSTRUCTIONS

Interconnection

Version 1.2

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1.2	19 th February 2006	Change of title to become "Instructions" in place of "Guidelines" and clarifying Article 3.8 and 6.1.6.
1.1	2 nd April 2005	TRA Logo added.

1. Purpose and Scope

The purpose of the Interconnection Instructions is to specify the minimal requirements that must be addressed in a Reference Interconnection Offer (RIO).

These Interconnection Instructions are based on the Regulatory Framework in effect at the time which include but are not limited to: the United Arab Emirates (UAE) Federal Law by Decree No. 3 of 2003, its Executive Order and all policies, procedures, rules, regulations, etc., issued by the Supreme Committee, the TRA or any other competent authority. The Interconnection Instructions are an integral part of the Regulatory Framework.

The Interconnection Instructions support the intention of the UAE Government that the provisioning of a world-class competitive telecommunication infrastructure is of critical importance to the economic development of the UAE. Interoperability is to be taken into consideration throughout these Interconnection Instructions and the subsequent Reference Interconnection Offer (RIO). Interoperability is the concept whereby communications and electronics systems or equipment has the capability of exchanging information or services directly between them, between their Users, or both. The principle underlying interoperability is that any two people within the State of the UAE can call each other at any time.

From time to time these Interconnection Instructions may be amended due to changes in the Regulatory Framework.

2. Definitions & Abbreviations

This section lists and defines the terms and abbreviations used within the Interconnection Instructions.

Authority (TRA)	The General Authority for Regulating the Telecommunication Sector
Call(s)	Calls are any demands to set up a connection to or from a Telecommunication Network to utilize a Telecommunication Service.

Designated Licensed Operator	Operator which is required to provide a RIO.
Interconnection Agreement	A contract under which Interconnection will be achieved pursuant to the rules and conditions issued by the TRA.
Licensed Operator(s)	Entities which are licensed by the Supreme Committee to provide Telecommunication Service pursuant to the provisions of the Federal Law by Decree No. 3 of 2003 and its Executive Order.
Point(s) of Interconnection (POI)	Point(s) in a Telecommunication Network where Interconnection takes place.
Public Telecommunication Service(s)	Any Telecommunication Service provided to all consumers or a part thereof in consideration of a fee.
Reference Interconnection Offer (RIO)	Standard contract of the Designated Licensed Operator to interconnect to another Licensed Operator for the purpose of enabling interoperability.
Service Provider(s)	Entity which provides a service using the Telecommunication Network of a Licensed Operator.
Telecommunication Network(s)	A system comprising one or more items of apparatus or means of communication for broadcasting, transmission, switching or receiving of Telecommunication Services, by means of electric, magnetic, electro-magnetic, electro-chemical or electro-mechanical energy and any other means of communication medium.
Telecommunication Service(s)	The carrying, transmitting, switching or receiving of service by means of a Telecommunication Network as referred to in the Federal Law by Decree No. 3 of 2003, Article 1.
User(s)	Entity which makes use of a Telecommunication Service. Users can be calling parties or called parties.

3. Interconnection Services

This section specifies the minimum Interconnection Services which must be offered within a Reference Interconnection Offer (RIO) for the purpose of enabling interoperability.

For all Interconnection Services, calling line identification (CLI), if available, must be transmitted transparently and without any alterations.

3.1. Originating Call Conveyance Services

Originating Call Conveyance Services are services used for conveying calls to another Licensed Operator at a Point of Interconnection (POI). The calls can be for any destination and will not necessarily terminate within the network of the other Licensed Operator.

Pursuant to the Regulatory Framework in effect at the time, Users may have the choice to select a Licensed Operator to convey their calls. In this case, interconnection charges are billed to the Licensed Operator by the Designated Licensed Operator for conveying the call to the POI over the Telecommunication Network.

- **Single Transit:** Calls delivered at a POI located at a national transit serving the local exchange of the calling party.
- **Double Transit:** Calls delivered at a POI not located at a national transit serving the local exchange of the calling party but delivered via another national transit to the POI.

There are two basic categories of originating services:

1. **Carrier Selection:** Is a service when a User dials a prefix each time when establishing a call, to route the call to the selected Licensed Operator for conveyance. The selected Licensed Operator typically bills the calling party for the selected calls.
2. **Carrier Pre-Selection:** Is a service when a User arranges to have a prefix permanently installed in order to avoid dialing a prefix each time when establishing a call. Calls are then automatically routed to the selected Licensed Operator for conveyance. The pre-selected Licensed Operator typically bills the calling party for the selected calls.

If neither of these services is deployed and the User dials without a prefix, the call defaults to the network of the Licensed Operator that provides access to the calling party.

3.2. Transit Call Conveyance Services

Transit Call Conveyance services are services used for conveying calls received by a Licensed Operator at a POI and conveying those calls to another Licensed Operator. The Licensed Operator receiving the calls is responsible for their onward conveyance.

3.3. Terminating Call Conveyance Services

Terminating Call Conveyance services are services when terminating calls are received by a Licensed Operator at a POI to terminate within its own network. In addition, Terminating Call Services apply if a Licensed Operator has a contract with a Service Provider and is terminating calls on behalf of the Service Provider.

Interconnection charges are billed by the Licensed Operator terminating the call.

Terminating Call Services are relevant for all Telecommunication Services which terminate on numbers which are valid according to the numbering plan of the UAE.

3.3.1. Call Terminating Services

The following services are considered basic Terminating Services:

Single Transit: Calls received and then conveyed from a POI located at a national transit serving the local exchange of the called party.

Double Transit: Calls received at a POI not located at a national transit serving the local exchange of the called party but delivered via another national transit to the local exchange of the called party.

Mobile Voice Termination: Calls received at a POI and conveyed to the mobile called party.

Mobile Data Termination: SMS, MMS and any other data received at a POI and delivered to the mobile called party.

3.3.2. Directory Assistance Services

Directory Assistance Services are services used when a calling party needs information from a directory services database. Calls to Directory Assistance Services must be conveyed over Points of Interconnection by all Licensed Operators and allowed access by the Licensed Operator who has the connection to the directory service database. Branding must be provided where technically feasible.

3.3.3. Operator Services

Operator Services are services used when a calling party requests to be connected to a called party or have optional billing arrangements via an operator. Branding must be provided where technically feasible.

3.3.4. Emergency Call Services

Emergency Services are services used when Users call to officially designated emergency UAE numbers. Emergency Services must be conveyed over defined Points of Interconnection. Emergency Services are typically terminated by the Designated Licensed Operator.

All Users within the UAE must be able to dial officially designated emergency numbers within the UAE and they must be free of charge to the calling party.

3.3.5. Short Number Call Services

Short Number Call Services are services used when Users dial any short numbers within the UAE. Calls to short numbers of a given interconnecting Licensed Operator must be conveyed over the Points of Interconnection between all Licensed Operators. Pursuant to the Regulatory Framework in effect at the time, all Users within the UAE must be able to reach all short numbers within the UAE.

3.4. Value Added Services

Value Added Services are services used when a User dials a non-geographic number which is then routed to the network of the Licensed Operator that provides access to the provider of the Value Added Services.

3.5. National Roaming Services

National Roaming Services offer the Licensed Operator the possibility of using an existing mobile network belonging to the Designated Licensed Operator. Typically, national roaming services are services used to offer Users coverage within a country in areas where a Licensed Operator has no coverage.

Licensed Operators utilizing national roaming services must have the capability to use independent number ranges and their own brand.

The Designated Licensed Operator must offer National Roaming Services for the retail services which are offered to its own customers at the same level of quality standards. Special attention is required for the call handover. All definitions and services must be based on ETSI and the GSM Association.

3.6. Directory Database Services

Directory Database Services offer Licensed Operators the capability to send information regarding their own customers into a central database.

A secure electronic interface must be provided to send and receive all the relevant customer information (name, address, phone numbers or any special indications) to the Designated Licensed Operator or its contractor.

3.7. Network Interconnection Services

Network Interconnection Services must define how network capacity is handled for the network interconnection links which interconnect the networks of the Licensed Operators.

3.8. International Interconnection Services

International Interconnection Services, which allow Other Licensed Operators to connect to international destinations and to access the capacity of international circuits, must be provided by the Designated Licensed Operator.

Pursuant to the Regulatory Framework in effect at the time, rates for International Interconnection Services could be offered at commercially available market prices or interconnection prices.

3.9. Leased Circuits Services

Leased Circuits Services are services used to provide a dedicated communication channel between two or more points within the UAE.

The Designated Licensed Operator must offer leased circuits services to the Licensed Operator based on the Regulatory Framework in effect at the time.

3.10. Co-location Services

Co-Location Services are services used to place Telecommunication Service equipment and facilities at locations of the Designated Licensed Operator for the purposes of interconnection. Where the two networks meet is called the Point of Interconnection (POI).

Every attempt to accommodate the Licensed Operators must be made. There is no obligation for the Designated Licensed Operator to build space if it is not available. However if no space is available, the condition must be verifiable. If no reasonable accommodations can be made, virtual co-location must be offered.

3.11. Site Sharing Services

Site Sharing Services are services used for the sharing of a mobile Telecommunication Network and typically consist of feeders, antennas, antenna towers, microwave, equipment/telecom room, etc.

3.12. Facility Sharing Services

Facility Sharing Services are services used for the sharing of facilities within a Telecommunications Network to provide Telecommunication Services.

Examples of facilities to be shared could be but are not limited to: conduits, ducts, rights-of-way, wiring, ground network, cabling, equipment, air-conditioning, power, security, poles, etc.

On demand, the Designated Licensed Operator must provide an offer in accordance with the Regulatory Framework in effect at the time.

Service level agreements (SLA's) must be offered by the Designated Licensed Operator in order to guarantee the functionality of all shared facilities.

3.13. Infrastructure Sharing Services

Pursuant to the Regulatory Framework in effect at the time, Infrastructure Sharing must be made available.

3.14. Bitstream Access Services

Pursuant to the Regulatory Framework in effect at the time, Bitstream Access Services must be provided to allow Licensed Operators the ability to offer high speed access services to their customers.

4. Interconnection Processes

Interconnection Processes describe the tasks and timelines of the responsible parties in order to guarantee the cooperation between the Licensed Operators and the quality of service (QoS) to their customers.

4.1. Account Management

Account Management is the process whereby commercial and operational aspects are handled between the Licensed Operators.

It is recommended that each Licensed Operator appoint account managers who head a team of experts and have the responsibility for the tasks and timelines defined in the Interconnection Agreement. Single points of contact should be defined for specific tasks in order to guarantee reliable information exchange between Licensed Operators.

Account managers and their teams should meet at regular intervals. All parties should make their best efforts to find solutions for open issues in all areas, including but not limited to planning, forecasting, ordering, implementing, performing network changes and any adaptations which are necessary for interconnection.

4.2. Provisioning Processes

All Provisioning Processes within this section are the minimal processes which need to be defined in detail within the Reference Interconnection Offer (RIO). These processes apply to all interconnection services.

4.2.1. Planning

Planning is required to include network capacity and timelines for any Telecommunication Services.

Special attention is needed for the handling of new interconnection links, changes to interconnection links and removal of interconnection links.

The Designated Licensed Operator must provide a list to Licensed Operators with all possible Points of Interconnection. This list must contain at a minimum the following information: location, model, available capacity of the equipment, co-locations, sites and/or facilities.

Based on information provided, Licensed Operators have the ability to plan their own network topology.

Licensed Operators with anticipated capacity changes must provide quarterly forecasts. Adequate capacity should be guaranteed between the Points of Interconnection of Licensed Operators.

Any changes planned by a Licensed Operator which have the possibility to impact another Licensed Operator's Telecommunication Network must allow adequate timeframes and be agreed to between the parties.

4.2.2. Traffic Forecast

Traffic Forecasts are capacity plans for the traffic generated by Telecommunication Services. As a general rule, Traffic Forecasts should be provided in minutes of use during the peak and off-peak "busy hour". A two (2) year forecast should be provided and up-dated every six (6) months. The forecast reports should be exchanged in a standardized format between the Licensed Operators. Forecasts should be best efforts.

A pre-defined percentage of spare capacity must always be available. Dedicated capacity for emergency services needs to be taken into consideration.

Based on the amount of traffic generated, the corresponding volume of interconnection links can be forecasted.

4.2.3. Ordering

Ordering processes must specify detailed information for how to obtain interconnection services. The Designated Licensed Operator should offer tools and electronic interfaces to its provisioning systems that allow Licensed Operators to place orders. Licensed Operators should have the capability to track the status of their orders. Where no electronic interfaces are yet available, standardized forms with all relevant information should be exchanged between Licensed Operators.

In addition to the ordering processes, processes for changing or deactivating interconnection services should be defined.

Standard lead times for the delivery of individual interconnection services must be defined in order to specify delivery times and realistic implementation dates for various interconnection services.

An order confirmation must be provided within an agreed upon number of working days to confirm the delivery dates. If a Licensed Operator receiving the order encounters an unavoidable problem meeting the agreed upon timeframe due to extraordinary circumstances, the reason must be provided and another delivery date should be proposed. If possible, an alternate solution must be provided in order to meet the initial delivery date.

If Licensed Operators do not reach an agreement on the delivery dates, dispute handling processes come into effect.

4.2.4. Implementation

Implementation processes define how to implement interconnection services within the Telecommunication Network. An implementation cycle specifies all the tasks to be completed during a timeline that starts with an order and ends at acceptance.

Detailed processes must be established for the testing of interconnection services. Testing might be required utilizing specific test environments. Interoperability and end-to-end testing is required within the live environment before formal acceptance. Testing might also include the

testing of billing systems and the verification of call detail records (CDR's) and any other appropriate information technology (IT) systems. Interconnection billing shall not begin before formal acceptance.

At the end of an implementation cycle a formal hand-over of the implemented interconnection service should take place.

4.2.5. Network Changes

Network Changes which have an impact on the Telecommunication Network and/or the Points of Interconnection must be defined within detailed processes.

Licensed Operators must agree on timelines for recurring changes, e.g. for routing adaptations, implementation of number ranges, etc.

For non-recurring changes, Licensed Operators must agree on a timeline for these specific changes by following the rules of the implementation process. Network changes must be announced in advance to ensure adequate time is available to coordinate and implement these network changes. If necessary, a special project team can be formed to carry out the changes.

Network changes must be documented by the Licensed Operators.

4.3. Network Management

Network Management must specify all the operational and maintenance processes which are essential for maintaining Telecommunication Networks and their corresponding Points of Interconnection.

Routing rules for routing within Licensed Operator's networks must be defined.

Handling of overflow must be standardized. Congestion must be avoided and immediate action taken by Licensed Operators in case congestion occurs at any POI. It is recommended that Licensed Operators have dedicated contacts within their network operation centers. Contacts should be available seven days per week, twenty-four hours per day (7 x 24), including all holidays.

Service level agreements (SLAs) must be offered by the Designated Licensed Operator and agreed to by other Licensed Operators.

4.3.1. Network Monitoring

Network Monitoring must be done within the network operation centers of the Licensed Operators. Tools and capabilities must be available to control the traffic flow, optimize the use of available capacity and identify network faults.

Monitoring and measurements must be performed routinely and appropriate processes must be in place to resolve any quality issues.

Reporting must be done as defined in the service level agreements (SLAs). Reports must be exchanged quarterly between the Licensed Operators. A copy of these quality reports must be sent to the TRA.

4.3.2. Network Maintenance

Network Maintenance processes must be defined for planned work or unexpected events within a Telecommunication Network.

Planned work can be any changes within a Telecommunication Network, for example routing changes, hardware or software upgrades, re-location, function tests, replacing of network equipment, changes to numbering plans, etc.

Maintenance windows must be outside of busy hours.

Examples of unexpected events are equipment failure, power failure natural disaster, etc. Licensed Operators must have a recovery plan to deal with unexpected events.

4.3.3. Fault Handling

Fault Handling procedures must be established relating to each interconnection service. If there is a potential impact on Users, fault resolution must be done in a highly efficient manner. Priorities should be agreed upon in advance for fault handling of the various interconnection services.

Faults must be reported by the Licensed Operators immediately upon awareness of a problem in its own network or suspected trouble in another Licensed Operator's network. The trouble should be reported via a standard trouble ticket. At minimum, a standard trouble ticket should have the following information: trouble ticket number, date, times for recordable

actions, exact description of the problem, priority level, direct phone number of specialized contact person for clarification, plus any additional information which is relevant to solve the problem.

Within fifteen (15) minutes the Licensed Operator of where the trouble is suspected should confirm the receipt of the trouble ticket. If the fault cannot be fixed within the first thirty (30) minutes, a reply should be sent to the original Licensed Operator who reported the problem.

If a Licensed Operator is aware of or suspects trouble that could affect other Licensed Operators, it must inform all other Licensed Operators who could be affected by the trouble. The correspondence of the trouble should contain the reason for the problem, the necessary actions to solve it and the resolution time.

If the problem cannot be resolved within the original resolution time, an update should be sent providing a new resolution time.

After the resolution of the fault, the Licensed Operator who opened the trouble ticket must be informed. The Licensed Operator who reported the trouble ticket must confirm that the problem is resolved and send the notification to the other Licensed Operator(s). The trouble ticket can then be closed.

The fault resolution time is the time from when the trouble ticket is opened until the trouble ticket is closed.

Escalation procedures must be in place in case the responsible contacts are not receiving the support needed as defined within the fault processes and/or the service level agreements (SLAs).

Licensed Operators must cooperate in analyzing problems and exchanging information which is required to avoid recurring problems.

Recurring faults must be categorized and fault reports must be exchanged quarterly between the Licensed Operators.

4.4. Consumer Processes

Consumer Processes define how contacts with customers who are Users of multiple Licensed Operators are handled. Processes must be defined in order to make sure that consumers receive the best possible service and support. A single point of contact must be established by each Licensed Operator for the handling of customer issues which prevent customers from being passed between operators when trying to locate the party responsible for the resolution of their problem. Transferring of customers between Licensed Operator should be avoided whenever possible.

Licensed Operators must provide the TRA with telephone numbers to their Customer Care with single point of contacts and with their customer reporting procedures.

4.5. Co-location Processes

Co-location (physical and virtual co-location) Processes must define all aspects related to planning, forecasting, ordering, implementing and maintaining of co-locations for Points of Interconnection.

The Designated Licensed Operator must provide the Licensed Operator with a list of all the Points of Interconnection where physical co-location is available. Every attempt to accommodate the Licensed Operators must be made. There is no obligation for the Designated Licensed Operator to build space if it is not available. However if no space is available, the condition must be verifiable. If no reasonable accommodations can be made, virtual co-location must be offered.

Detailed processes must define the construction and modifications of co-locations.

4.5.1. Co-location Requirements

Based on the list of possible co-locations the Licensed Operators must determine locations and conditions for co-location. Co-locations must be within secure buildings.

Licensed Operators must have the ability to lock their equipment in a private room or a caged space.

At a minimum co-location must include secure access, electrical power, air-conditioning, cable ducts, access to a fixed-net phone line, etc.

In case of a power outage, back-up power must to be guaranteed for a minimum of four (4) hours.

4.5.2. Co-location Access

Access and security processes must be defined in order to guarantee that authorized employees of the Licensed Operators have access to co-locations seven days per week, twenty-four hours per day (7 x 24), including all holidays.

It is recommended that access is handled by electronic access tracking systems.

4.6. Site Sharing Processes

Site Sharing Processes must define all aspects related to planning, forecasting, ordering, implementing and maintaining the shared sites used for mobile equipment. These sites can be within buildings, outside of buildings, on roofs, in the country side, etc.

Designated Licensed Operator must provide information about its mobile network specifying all its sites. Existing and new sites should be shared between Licensed Operators.

Detailed processes to define the construction, modification and reservation of space at the shared sites must be defined and long range planning must be taken into consideration.

4.6.1. Site Sharing Requirements

The Designated Licensed Operator must include a list of sites for interconnection of their mobile network. At a minimum, the impacts of site sharing must be in compliance with the UAE laws and regulations. Technical, environmental, visual and demand considerations should be taken into account.

4.6.2. Site Sharing Access

Access and security processes must be aligned with the site contract between the site owner and the Licensed Operator to ensure authorized employees of the Other Licensed Operators have access to the site.

4.7. Facility Sharing Processes

Facility Sharing Processes must define all aspects related to planning, forecasting, ordering, implementing and maintenance of any facilities which are shared within a Telecommunication Network.

4.7.1. Facility Sharing Requirements

Depending on the facilities to be shared, processes must be defined in detail.

4.8. Infrastructure Sharing Processes

Infrastructure Sharing Processes must define all aspects related to planning, forecasting, ordering, implementing and maintaining the shared infrastructure.

4.9. Numbering

Numbering changes may be necessary based on changes initiated by Licensed Operators or due to an obligation by the TRA.

For recurring changes, standardized processes must be established. For non-recurring changes and special projects, dedicated project teams must be created.

Detailed processes must be defined in order to accomplish these obligations. It is important to define timelines and due dates which must be met by all involved parties during a numbering change process.

Number portability for Licensed Operators applies according to the Regulatory Framework in effect at the time.

4.10. Mass Call Events

Mass Call Events are specific time periods when high volumes of calls are generated by Users, e.g. call-in events broadcasted on television.

Licensed Operators must exchange information about mass call events they are planning or events of which they are aware.

Adequate capacity must be ordered and provided on a temporary basis and if necessary the routing must be adapted. Licensed Operators should cooperate in order to avoid congestion between the Points of Interconnection.

4.11. Fraud and Abuse

Fraud applies when customers of Licensed Operators use Telecommunications Services for unfair or illegal activities.

Abuse applies when customers of Licensed Operators use any kind of Telecommunication Services to conduct annoying, harassing or threatening activities.

Specialized experts must be identified as single points of contact between Licensed Operators to prevent fraud or abuse.

5. Technical Specifications

Technical Specifications describe requirements of interconnection for the functional delivery of services between Telecommunication Networks. Pursuant to the Regulatory Framework in effect at the time, these specifications must be included in the Reference Interconnection Offer (RIO) and shall include but are not limited to switching, routing, transport, signaling, interfaces, quality of service, network interoperability, etc. Licensed Operators must be able to choose, utilize and adapt any or all of the specifications at their Points of Interconnection (POI).

In order to enable Licensed Operators to make efficient selections for Points of Interconnection, the Designated Licensed Operator must provide details of current and future Points of Interconnection. These details shall include but are not limited to a list of locations with name and address, including maps for Points of Interconnection, the type and functions of the

locations such as local exchange, network transit, mobile service center, international gateway, etc, and type of vendor equipment at the locations, etc.

The following basic principles apply for interconnection between Licensed Operators:

Interoperability is required: It must be guaranteed that any call within the UAE is conveyed to any called party, subject to the Regulatory Framework in effect at the time.

Calling Line Identification (CLI) transmission: For all Interconnection Services, CLI, if available, must be transmitted transparently and without alteration.

Emergency calls: All emergency calls must be treated with the highest priority within the Points of Interconnection. If possible, dedicated capacity within the networks should be provided.

Standard ITU and ETSI Recommendations are the basis for any technologies and interfaces used by the Licensed Operators.

5.1. Network Interconnection Links

Network Interconnection Links must be offered with the routing options of uni-directional or bi-directional and should be engineered as “fully-provisioned” or “high-usage” links. Fully-provisioned links shall be engineered so that congestion is rare and within service level agreements (SLA’s) established during the normal busy hour according the Erlang B calculations. High-usage links may be provisioned with an expected reasonable degree of congestion and/or with the capability of planned overflow through a fully-provisioned link.

A standard synchronization or clocking source must be made available by the Designated Licensed Operator at every Point of Interconnection.

5.2. Signaling Network Interconnection

Signaling must be based on the ITU Signaling System Number 7 (SS7), integrated Services User Part (ISUP) for interconnection signaling and should ensure that international standards are met for international calls and mobile roaming. Licensed Operators shall provide signaling

interconnection and ensure call control information is delivered for processing calls.

The Designated Licensed Operator shall specify the signaling configurations to be used on interconnection links within their RIOs.

5.3. Quality of Services

Quality of Services (QoS) must be provided by Licensed Operators to other Licensed Operators with the same quality of service provided on their own networks and should adhere to service level agreements (SLAs).

QoS technical measurements shall be according to SLAs during peak busy hours. Quality measurement indicators shall be based on ITU-T recommendations and should include but not be limited to: Answer-seize ratio, transmission delay, transmission loss (loudness), noise and distortion, jitter, echo and loss of stability, cross-talk, and bit error rate, etc.

The Designated Operator must provide SLAs with all the relevant criteria within their RIO.

6. Billing of Interconnection Charges

Billing of Interconnection Charges between Licensed Operators is required for all interconnection services. Billing should be done on a monthly basis providing structured and readable invoices and provided in an electronic format.

Payment methods must be defined in advance. It is recommended to define invoice categories for each interconnection service.

6.1. Billing of Services

The structure of the invoice should be designed individually for each different service category.

6.1.1. Call Conveyance Billing Services

Billing of Call Conveyance Services is based on standardized call detail records (CDRs). CDR's are generated by network and data switches and typically processed through a mediation device which places them in the interconnection billing system. The Licensed Operators must have the

capability to measure the traffic duration in seconds according to the applicable ITU standards and definitions.

If for any reason during a specific time no CDR's are generated in a network, the Licensed Operator must be able to request the missing CDR's from another Licensed Operator.

6.1.2. Value Added Billing Services

Billing of Value Added Services must be defined in order to guarantee transparent billing scenarios for all parties involved.

6.1.3. National Roaming Billing Services

Billing of National Roaming Services may be accomplished based on the CDR's of the Licensed Operators. The Designated Licensed Operator must provide all the data which allow the Licensed Operators to produce their own customer invoices.

Detailed reports must be provided which enable Licensed Operators to verify customer invoices.

6.1.4. Directory Database Billing Services

Billing of Directory Database Services is typically based on volume and the number of transactions.

6.1.5. Network Interconnection Billing Services

Billing of Network Interconnection Services is typically based on the number of network interconnection links. In addition to the recurring monthly charges there may also be non-recurring charges.

6.1.6. International Interconnection Billing Services

Connecting to international destinations is typically billed by usage and for capacity services based on bandwidth. In addition to the recurring monthly charges there may also be non-recurring charges.

6.1.7. Leased Circuit Billing Services

Billing of Leased Circuit Services is typically based on the volume of leased circuits. Charges may depend on capacity, area and distance between the end-points.

6.1.8. Co-location, Site, Facility and Infrastructure Sharing Billing Services

Billing of Co-location, Site sharing, Facility Sharing and Infrastructure Sharing Services is based on the services being utilized.

Recurring charges can be billed monthly, quarterly or annually. These charges may be fixed or variable. Non-recurring charges could apply for planning, building, implementation, etc.

6.1.9. Bitstream Access Billing Services

Billing of Bitstream Access Services may be fixed or variable, monthly recurring and/or non-recurring charges.

6.1.10. Billing of Special Charges

Billing of Special Charges applies for a unique, non-recurring event. Special Charges should be negotiated in advance.

6.2. Reconciliation

Parties to an Interconnection Agreement must have the possibility to reconcile, or verify, interconnection invoices for every interconnection service billed. The parties shall put into place procedures by which this possibility exists on a periodic basis agreed to by the parties up to and including a formal audit process.

To support the reconciliation process, the parties shall exchange call detail records (CDRs), when applicable. For discrepancies identified between interconnection invoices and the supporting evidence, the parties shall work cooperatively to identify the source of the problem.

CDRs must be retained by each Licensed Operator for a period defined in the prevailing Regulatory Framework.

7. Escalation and Dispute handling

Interconnection Agreements must identify procedures to follow when the parties can not reach agreement for topics such as operational and billing issues. Generally speaking, the first step would be escalation of the matter to a level of management with responsibility to resolve disagreements. If at some point no agreement is possible, the parties may refer the dispute to the TRA in accordance to the Regulatory Framework in effect at the time.

8. General

8.1. Confidentiality

By the very nature of the interoperability of telecommunications, consumer information is made available to Licensed Operators and in some cases; this information must be passed to a Licensed Operator which is not billing the User.

Great care must be taken to respect the protection of consumer information. Customer information provided for the purposes of interconnection must never be used for marketing purposes or gain. Confidential consumer information should not be sold or otherwise provided to unaffiliated third parties other than to the extent necessary to process, service or maintain customer information. In cases of third party processing of customer information, it is the responsibility of the Licensed Operator to protect the confidentiality and security of the consumer information it has been entrusted to protect. Interconnection Agreements must specify limitations on the use of consumer data. Each Licensed Operator is responsible to protect the privacy of consumer data.

8.2. Best Efforts

The underlying principle of the Reference Interconnect Offer and the negotiations and cooperation between licensed operators must take into consideration the goals of the Government of the UAE with regards to competition in the telecommunications sector.

The UAE Government has decreed a regulatory and policy framework that facilitates the development of the country's telecommunication infrastructure and services in order to meet national, regional and international objectives, including ensuring that such competition is sustainable while at the same time ensuring that adequate protection is given to the rights and interests of all consumers of telecommunication services.