

3.5.2004

100/532/2004

According to distribution list

### Unofficial translation

FICORA's inquiries of 5 and 6 February 2004 to telecommunications operators

## ROUTING OF TRAFFIC TERMINATING TO GSM NETWORKS BY GSM GATEWAY EQUIPMENT

### Introduction

The Finnish Communications Regulatory Authority (FICORA) has been informed that traffic terminating to GSM networks is more and more routed by means of GSM Gateway equipment. In practice, this means that the incoming traffic from other networks to GSM networks is routed through a GSM gateway device to be coupled into the subscriber connection and the phone call is transformed into an internal call in the target network. The use of GSM Gateway equipment has caused technical problems, among which the most significant have been the elimination of calling line identification or indication of a false calling party number, poor quality of calls, delay in establishing the connection, malfunction of data, fax and WAP calls and barring of listening to messages received.

Oy Radiolinja Ab ja TeliaSonera Oyj have asked FICORA's opinion on the use of the equipment concerned and its compliance with the Communications Market Act.

### FICORA's inquiry

To get an idea of the scope of use of GSM Gateway equipment and the extent of technical problems incurred, FICORA submitted an inquiry to this effect to operators of mobile and fixed networks. Replies were received from Finnet Association, Finnet Verkot Oy, Oy Radiolinja Ab and TeliaSonera Finland Oyj.

In its reply Finnet Association states that GSM Gateway equipment does not make a problem due to the small number of devices, but their use is less reasonable because of the weakening quality of the call connection. According to Finnet Association, GSM Gateway equipment is used mainly in exchanges and call centers. Among the problems detected, the most significant were the lacking or incorrect calling party number.

Finnet Verkot Oy states in its reply that to their knowledge the equipment is used in phone calls from the fixed network towards a mobile network. The extent of use is not known exactly. The problem consists mainly of false calling party numbers and the quality of the connection.

According to Oy Radiolinja Ab, GSM Gateway equipment is more and more used at least in the incoming traffic from abroad and from private exchanges of enterprises to their network. The customers have suffered from problems in function of voicemail service, data calls, WAP services and fax services. Calling line identification restriction and poor voice quality have also caused problems. The use of GSM Gateway equipment also has caused point loading in some individual cases but so far this has not affected the efficiency of spectrum planning. Oy Radiolinja Ab has not so far taken measures to restrict the use of GSM Gateway equipment. In its reply the company asked FICORA to express its opinion on the use of GSM-Gateway equipment and its compliance with communications legislation.

TeliaSonera Oyj states in its reply that GSM Gateway equipment has caused problems particularly to the fax traffic and listening to mailbox messages abroad. The voice quality has also been poor. The use of GSM Gateway equipment has also caused point loading in the network, but this has not provoked any significant capacity problems. In its statement, TeliaSonera Oyj asked FICORA to express its opinion whether the use of GSM Gateway equipment causes interference to communications networks, equipment, users or other persons as referred to in section 131 of the Communications Market Act.

#### Provisions concerning the competence of FICORA

According to section 119(2) of the Communications Market Act (393/2003) FICORA shall supervise the compliance with the Communications Market Act and provisions issued under it. If a telecommunications operator or a person whose right or benefit is affected by the matter considers that someone is acting in violation of the Act or the provisions issued under it, the operator or person may, under section 126 of the Act, refer the matter for examination by FICORA. FICORA may also, on its own initiative, take up the matter for examination.

According to section 121(1) of the Communications Market Act, if someone violates this Act or provisions issued under it, and, despite being requested to do so, fails to rectify his actions within a reasonable period of at least one month, FICORA may order him to rectify the error or omission. A conditional fine or a threat of terminating the operations or of having the act done at the defaulter's expense may be imposed as sanctions in support of the obligation.

#### Reasons for the use of GSM Gateway equipment

The main reason for the use of GSM Gateway equipment is the current distortion in pricing, which concerns incoming calls to mobile networks from other networks. Calls within the same network are cheaper than the termination prices or the prices for calls from the fixed network to a mobile network, even though the expensive base station and spectrum resources are used twice in calls within the same network, and in calls ter-

minating to a mobile network or in calls from a mobile network to the fixed network (outgoing traffic) only once.

#### Provisions on the use of GSM Gateway equipment

From the statutory point of view, two different uses of GSM Gateway equipment can be distinguished. Firstly, they are used by telecommunications operators mainly in the traffic from abroad terminating to a mobile network. This way, the normal international incoming traffic through an interconnection interface terminating to a mobile network is transformed into an internal call of the mobile network. The second purpose of use is to transform, by means of GSM Gateway equipment, the incoming traffic from an exchange, a call center or some other terminal device to a mobile network into an internal call of the mobile network.

In the first case, the mobile operator to whose network the traffic terminates, obtains, instead of a wholesale-priced termination compensation, a retail price charged for internal calls. In the latter case, the mobile operator to whose network the traffic terminates, obtains, instead of the price for a call from the fixed network to a mobile network, the price of an internal call in its network. In most cases the price for a call from the fixed network to a mobile network is much higher than that of an internal call.

Telecommunications shall meet all requirements of communications legislation including the quality requirements for communications networks and services set out in section 128 of the communications Market Act and technical regulations on communications networks and services issued by FICORA under section 129 of the same Act. Depending on the use of GSM Gateway equipment, the provisions to be applied are either those concerning the operations between telecommunications operators or those concerning the operations between the user and the telecommunications operator. Special attention should be paid to the following provisions:

#### *Interconnection of mobile network services*

According to section 42 of the Communications Market Act:

*Telecommunications between a mobile network and other communications networks shall be routed via a long-distance telecommunications service selected by the telecommunications operator providing the mobile network service.*

According to section 39(4) of the same Act:

*A telecommunications operator on which FICORA has imposed an interconnection obligation shall comply with the provisions of sections 40-42 and 45 unless an agreement can otherwise be reached on the content of the interconnection obligation.*

In accordance with the above mentioned sections in law, the parties may freely agree upon the way of routing the traffic between a mobile network and another communications network, but in case that an agreement on the way of routing cannot be reached, the traffic shall be routed

via a long distance telecommunications service selected by the operator providing the mobile network service. By its decision issued on 6 February 2004 FICORA has designated Finnet Verkot Oy, Radiolinja Origo Oy, Sonera Mobile Networks Oy and Ålands Mobiltelefon Ab to be undertakings with a significant market power regarding incoming traffic to a single mobile network. In the decision, among other things, an interconnection obligation has been imposed on the operators concerned. The decisions took effect on 1 March 2004. Except for Ålands Mobiltelefon Ab, all others have appealed against the decisions, but so far the Supreme Administrative Court has not repealed their entry into force.

If traffic from other communications networks, for instance from abroad, is routed through GSM Gateway equipment to a mobile network without the consent of the mobile operator, the procedure can be regarded to be in non-compliance with section 42 of the Communications Market Act. A prerequisite for an agreement on the use of GSM Gateway equipment is, naturally, that the arrangement is in compliance with all technical requirements set by FICORA in its regulations on interconnection.

#### *Obligation to eliminate interference*

According to section 131 of the Communications Market Act:

*If a communications network or equipment item causes danger or interference to a communications network, equipment, communications network user or another person, the telecommunications operator or another keeper of communications network or equipment shall take measures immediately to rectify the situation and, if necessary, isolate the communication network or equipment from the public communications network.*

*In a case referred to in subsection 1, FICORA may order rectification measures and isolation of the network or equipment.*

According to FICORA's inquiry to telecommunications operators, GSM Gateway equipment was found to cause users many kind of problems, among which it was primarily mentioned the restriction of calling line identification or indication of a false calling party number, poor quality of calls, long delay in establishing the connection, malfunction of data, fax and WAP calls and restriction of listening to the messages received. According to section 131 of the Communications Market Act, the telecommunications operator or another keeper of communications network or equipment shall take measures immediately to rectify the situation.

#### *Calling line identification restriction*

According to section 14(2) of the Act on the Protection of Privacy and Data Security in Telecommunications (565/1999):

*A telecommunications operator offering a fixed telephone network or mobile telephone network subscription shall ensure that a subscriber receiving a call to a subscription offered by the telecommunications operator has the possibility, in the voice telephony services of the subscription:*

*1) to eliminate calling-line identification free of charge; as well as*

- 2) *to reject incoming calls where the calling-line identification has been eliminated.*

If a mobile subscriber uses a service referred to in item 2, it is possible that he accidentally also eliminates calls from connections, where the calling line identification has been removed by the telecommunications operator. This may happen for instance when the incoming traffic to a mobile network is routed through a GSM Gateway device which is not capable of transferring the correct number of the caller, in which case the caller's number has been removed by the operator. According to section 14 of the Act on the Protection of Privacy and Data Security in Telecommunications, the subscriber only is entitled to eliminate the calling line identification, if so wanted.

#### *Transfer of calling line identification*

According to section 4(1-4) of FICORA's Regulation on transfer of subscriber's number information in communications networks (49 B/2003 M):

*The calling party number, i.e. the number of the access from which the call originates, must be transferred between telecommunications operators in a telephone service provided in public communications networks.*

*The telecommunications operator shall ensure that the transferred calling party number, and in case of call diversion the diverted number, is correct and unambiguous. The calling party number transferred from a telecommunications operator to another operator and the diverted number shall facilitate correct charging. In addition, the calling party number transferred by the telecommunications operator shall within technical limitations be such that using the number it is possible to call back to the calling access.*

*As a general rule, the calling party number shall not be changed when it is transferred through the communications network. Exception to this is transfer of the calling party number to a subscriber access, as appropriate prefixes to the calling party number must be added, or situations regarding number portability or other intelligent network applications, where the directory number shall be transferred instead of the access number.*

*Should the calling party number for technical reasons regularly be incorrect, the outgoing national traffic exchange or the incoming international traffic exchange may set the calling line identification restricted in the outgoing signaling irrespective of the default setting received by the exchange. Also in this case the calling party number is transferred to the address exchange but the address exchange will not send the number to the subscriber access, unless a special situation specified in statutes requires such efforts.*

According to section 4(1) of the Regulation, the main rule is that the calling party number shall be transferred between telecommunications operators in a telephone service provided in public communications networks. According to section 4(3) the number shall also be transferred unchanged, for the exceptions mentioned in subsection 3 concern only

adding of necessary prefixes or routing of traffic by intelligent network applications. Even in these exceptional cases the number shall be transferred. According to section 4(2) the telecommunications operator shall ensure that the transferred calling party number is correct and unambiguous and allows correct charging and calling back to the calling access. According to section 4(4), should the calling party number for technical reasons regularly be incorrect, the outgoing national traffic exchange or the incoming international traffic exchange may set the calling line identification restricted in the outgoing signaling. Even then, the calling party number shall be transferred to the address exchange.

A procedure, where the transfer of the calling party number is restricted by the telecommunications operator, for instance through GSM Gateway equipment, or the number is sent incorrect to the address exchange, in this case to the called party's mobile exchange, is against section 4 of FICORA's Regulation on transfer of subscriber's number information in communications networks.

#### *Call establishment, interconnectivity and interoperability*

According to section 4(3-4) of FICORA's Regulation on interconnectivity, interoperability and signalling in communications networks (28 D/2003 M):

*As appropriate, a connection can also be established between divergent bearer and communications services with interconnection adaptors. The adaptors may be located either in the public communications network or in a communications network connected to the public communications network. The adaptors shall be able to transfer essential information for the proper functioning of the mandatory bearer and communications services through the interfaces.*

*Interconnection between telecommunications operators shall be arranged so that essential information for the proper functioning of the mandatory bearer and communications services is transferred through the access interface.*

According to subsection 3, the use of different interconnection adapters is allowed on certain conditions. According to subsection 4, the interconnection between telecommunications operators shall be arranged so that essential information for the proper functioning of the mandatory bearer and communication services is transferred through the access interface. The information referred to may be for instance the calling party number. When GSM Gateway equipment is used in interconnection between telecommunications operators, it is apparent, that the calling party number is not transferred unchanged over the access interface and consequently the procedure is not in compliance with the requirements of section 4(4) of FICORA's Regulation on interconnectivity, interoperability and signalling in communications networks.

#### FICORA's interpretation

On the basis of what has been presented above, FICORA considers that the routing of traffic by a telecommunications operator from other telecommunications networks to a mobile network by means of GSM Gateway equipment, is not in compliance with the

requirements of sections 39(4) and 42 of the Communications Market Act, unless an agreement on this arrangement has been concluded with the operator providing mobile network services. A prerequisite for agreeing upon the use of GSM Gateway equipment is that the arrangement meets all requirements concerning the quality of communications networks and services presented in section 128 of the Communications Market Act and the technical requirements set for interconnection in FICORA's regulations. Among the most essential requirements are the requirement set by FICORA's Regulation on transfer of subscriber's number information in communications networks, section 4, obliging telecommunications operators to transfer the calling party number unchanged to the incoming traffic exchange, and the requirement set by FICORA's Regulation on interconnectivity, interoperability and signalling in communications networks, section 4(4), prescribing that the essential information for the proper functioning of the mandatory bearer and communication services shall be transferred through the access interface. The arrangement shall also enable the requirement of section 14 of the Act on the Protection of Privacy and Data Security in Telecommunications regarding the subscriber's possibility to reject incoming calls where the calling-line identification has been eliminated.

If GSM Gateway equipment is used in connection with exchanges and other terminal devices classified to be terminal equipment, they can be regarded as terminal equipment or part of such. In this case the provisions on interconnection in sections 39 and 42 of the Communications Market Act, and in section 4 of FICORA's Regulation on interconnectivity, interoperability and signaling in communications networks are not applied. The user of terminal equipment may also eliminate the calling-line identification on a per-call basis or permanently (Act on the Protection of Privacy and Data Security in Telecommunications, section 14(1)).

If GSM Gateway equipment is used as terminal equipment, the user shall ensure that all requirements set for terminal equipment are complied with and that the equipment does not cause such interference to a communications network, equipment, communications network user or another person that the prerequisites for the application of section 131 of the Communications Market Act should be fulfilled.

Director

Tapani Rantanen

Senior Adviser

Pekka Sillanmäki

Distribution: Telecommunications operators

For the information of: Ministry of Transport and Communications/  
Communications Department