A GUIDELINE FOR THE CHARGING AND ACCOUNTING PRINCIPLES FOR NGN

1 PREAMBLE

This document covers charging and accounting principles applicable to NGN services and sets out the general principles and conditions applicable by administrations for the capability to transport IP packet over IP based network between standardised interfaces and for services.
Specific charging and accounting principles for broadcasting issues are not currently addressed in this version of the document.

2 REFERENCES

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[D.224]	*Charging and Accounting Principles for ATM/B-ISDN(10/2000)*
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[Y.1401]	*General Requirements for interworking with Internet Protocol(IP) based networks*
[Y.FMCReq]	*FMC General Requirements(1/2006).*
[FGNGN-OD-00244	Draft FGNGN-FRA Version 7
	General Reference Model for NGN
[Y.NGN-GRM]	Functional Requirements and Architecture of the NGN
[Y.NGN-FRA]	Mobility requirements and mobility management architecture
[Y.NGN-MOB]	QoS Requirements and Architecture
[Y.qosarch]	Y.2111 Next Generation Networks – Quality of Service and performance(09/2006)
[Y.2111]	
[Y.2091]	Terms and Definitions for Next Generation Network

3 Definitions

Chargeable Packet Rate (CPR)

The Chargeable Packet Rate of a session is a single packet rate parameter used to determine the reservation based charge element for that connection. The CPR is a computed simplification of the traffic contract values of the connection to a single packet rate value. The concept of CPR applies only to charging and accounting. It is used only in the reservation based charge element. The CPR is computed as a function of the connection parameters, such as QoS class, source traffic descriptor for NGN aware terminal and associated tolerances. The use and the calculation function for the CPR are administration-specific.

Weighed Charging Rate(WCR)

WCR is one of the reservation/usage based charge element for that connection. As shown in the following *formula,* For each charging factor, relevant weigh can negotiate with telecom operator.

Tariff(Accounting)= ΣCiWi (where Ci stands for Charging Factor, Wi stands for relevant weighed rate)

Connection (session/ flow/call) establishment

Connection establishment indicates the moment the connection has been set up and has become available to the user to transport packets. For connections using signalling(or not), this corresponds to the entry into the 'active' state.

Connection(session/ flow/call) release

Connection release indicates the moment the connection has become unavailable to the user to transport packets. For connections using signalling(or not) this corresponds to the departure from the 'active' state.

Connection's(session/ flow/call) active phase

The *connection's active phase* indicates the entire period between connection establishment and connection release.

Distance

Distance in the context of this Document is to be related to the facilities made available to realise the connection between the applicable interfaces. It is administration-specific whether and how distance influences the charging parameters. If distance-dependent differentiation is used an administration may choose to define distance regions or distance zones to simplify its implementation.

3.1 Abbreviations and acronyms

The following abbreviations are used in this document:

CAC	***Call(Connection)*** Admission Control [I.371]
CPR	Chargeable Packet Rate
CDR	***Call*** Detail Record(Connection Detail Record/Charging Detail Record)
PDV	Packet Delay Variation [I.356]
CP_M(.)	Charge Parameter – connection Modification
CP_R(.)	Charge Parameter – Reservation
CP_S(.)	Charge Parameter – connection Set-up
CP_U(.)	Charge Parameter – Usage
INI	Inter Network Interface
OAM	Operation Administration Maintenance [I.610]
PPR	Peak Packet Rate [I.371]
SLA	Service Level Agreement
QoS	Quality of Service [I.356]
UNI	User Network Interface [I.112, I.413]
DSCP	Differentiated Services Code Point

4 UNITS, ELEMENTS, PARAMETERS AND CONCEPTS FOR CHARGING NETWORK UTILISATION

This clause introduces the charging units, the charge elements and their parameters and the concepts recommended to be used to charge for network utilization. The network utilization charges cover the costs related to the utilisation of the network resources.

Charge elements and their parameters are introduced below. The use (or not) of such elements and parameters and their values are administration-specific in case of charging, and subject to agreement between the Administrations involved in case of accounting.

4.1 Charging units

The following charging units are applicable to NGN charging.

- In case duration is used as element in the charge, the unit is mili-second (s).
- In case a number of byte is used as element in the charge, the unit is byte per second (byte/s).
- In case usage is used as element in the charge, the unit is a number of packets.

Note: To ease notation, an administration may choose to use kilo-byes or megabyte as the unit in charging or accounting, in stead of a single byte. Same rule is applied to the packets. Such a choice does not affect the essence of the charging or accounting.

4.2 Charge elements

For charging individual connections the following elements may be used:

- connection set-up charge element (see 4.2.1);

Connection set-up attempt charge element(if connection setup signalling is used)(see 4.2.2)

- reservation based charge element (see 4.2.3);
- usage based charge element (see 4.2.4).
- SLA based charge element (see 4.2.5)

4.2.1 Connection set-up charge

A connection set-up charge may be applied to each successfully established connection. This connection set-up charge may reflect the resources to establish (and to release) the connection, e.g. transport and processing of (or not) messages in all relevant nodes along the route, performing route calculations, performing CAC functions in all relevant nodes and the capacity reserved during the connection set-up phase in both directions.Its value is Administration-specific in the case of charging end customers, and its values are subject to (bilateral) agreements between Administrations in case of accounting.

4.2.2 Connection set-up attempt charge element(Note 1)

A connection set-up attempt charge may be applied in case a connection has not been successfully established. The connection set-up attempt charge may reflect the resources to attempt the connection set-up (see 4.2.1).
The application of such a connection set-up attempt charge may depend on the reason for the failure of the attempt. Different policies may be applied according to the cause of the failure. e.g failure by the network. Such policies are Administration-specific in the case of charging end customers, and such policies are subject to (bilateral) agreements between Administrations in case of accounting.

4.2.3 Reservation based charge element (Note 1)

The reservation based charge element applies a charge for the reservation made in the network for a specific connection. It relates to the resources the administration reserves for the duration of the connection. Reservations are necessary for example to implement the QoS commitments applicable to the connection.

The reservation based charge may depend on the QoS class, the SLA, the traffic descriptor declared by TE(Terminal Equipment), and the associated tolerances. An Administration may choose to convert these parameters or some of these parameters into a single rate value expressing the reserved resources: the chargeable packet rate. The conversion from connection parameters into a CPR(Chargeable Packet Rate) is administration-specific. The reservation based charge element is determined by multiplying the value of the reservation charge parameter CP_R(.) applicable to the connection with the value of the CPR(if Applicable) and with the duration of the connection. Another way for reservation based charge is a WCR that is one of the reservation/usage based charge element for that connection. For each charging factor, relevant weigh can negotiate with telecom operator. The value of CP_R(.) may depend on the QoS class, the SLA, the distance between the applicable interfaces (region or zone) and the charging period. Its value is administration-specific in the case of charging end customers, and its value is subject to (bilateral) agreements between administrations in case of accounting.

The reservation based charge element takes into account neither the number of packets admitted into the network nor the number of packets transported by the network.

4.2.4 Usage based charge element

The usage based charge element applies a charge based on the number of packets admitted into the network and a charge based on the number of packets delivered by the network. The first charge relates to the work load inflicted upon the network, the second charge relates to the NGN service successfully delivered by the network.

The charge may depend on the QoS class, the SLA and on the value of the DSCP. The usage based charge element is determined by multiplying the value of the usage charge parameter CP_U(.) applicable to the connection by the corresponding number of packets. There may be more than one parameter CP_U(.), for example depending on the DSCP information element, depending on whether the parameter relates to the admitted packets or the delivered packets and depending on the charging period. Its value is administration-specific in the case of charging end customers, and its value is subject to (bilateral) agreements between administrations in case of accounting.
In case more than one administration is involved in realizing the connection, charging for packets delivered to the destination is possible only if the delivered packet/byte counts are available from the terminating administration by mutual agreement. If no such agreement is available, charging cannot (and shall not) rely on delivered packets. In such a case the usage based charge element will only relate to the number of packets admitted into the network.
Note 1 For providing the user request QoS, IntServ, RMD DiffServ, SIP was proposed by IETF, and also ITU-SG11 proposes QoS signalling

4.2.5 SLA based charge element

The SLA based charge element applies a charge based on the subscription. In a case of DiffServ, SLA will directly mapped to the DSCP values that are now differently implemented by Telecom vender.

4.3 Charging periods

An administration may choose to apply different charges to different periods (if applied), e.g. peak and off-peak hours. Such periods are referred to as charging periods.

The reservation based charge element relates to the duration of a connection. The value of the reservation charge parameter CP_R(.) may differ between charging periods.In order to allow the reservation based charge element to differ for different charging periods, the duration of the connection within each charging period must be known. This information can be derived by comparing the start date and time and the end date and time of the connection to the charging periods.

The usage based element relates to the packets admitted into the network and packets delivered by the network. The value of the usage charge parameter(s) CP_U(.) may differ between charging periods.In order to allow the usage based charge element to differ for different charging periods, the number of packets within each charging period must be known. Therefore, separate packet/byte counts for each charging period need to be available.

Note that it is not required that all charge elements are different for different charging periods. For example, it is possible to have two charging periods which have different reservation charge parameters, but identical connection set-up charge elements and identical usage charge parameters.

Recording interval

A recording interval is the time interval that a CDR pertains to. Measurements may be registered for the connection in several successive CDRs(*with unique identifier that can discriminate between different CDR*) pertaining to successive recording intervals.

Note: The start time and end time of a recording interval need to be recorded. For example: the first recording interval for a connection is likely to start when it is established. The final recording interval for a connection is likely to end when it is released. Intermediate recording intervals may be started and stopped at regular intervals, or by special events, such as an alteration of the connection characteristics (e.g. renegotiations of traffic contract (if possible)). Recording intervals may be used if different charges may apply to different time intervals.

CDRs shall be generated immediately on the following occasions (see Figure.1):

- at connection establishment (indication 0);
- at connection release (indication 6);
- during the connection's active phase
  - When any of the traffic contract parameters are modified(if relevant signalling is supported).
  - at the end of each recording interval (see indications 2, 3, 4, 5). A recording interval may be started for several reasons, for example:
    - to cope with a new charging period (e.g. for peak and off-peak hours, see indication 2 and 3);
    - to cope with the limited range implemented for the registration of the number of packets

(counter roll-over protection, see indication 5);

- to end a recording interval for a long-lasting connection (see indication 4);
- to limit the duration of a recording interval and thus to limit the impact of losing a CDR (see indication 4)
- for multi connections: when a leaf is added or removed (not indicated).
- Mobility(e.g. roaming or inter-system handover) (not indicated).

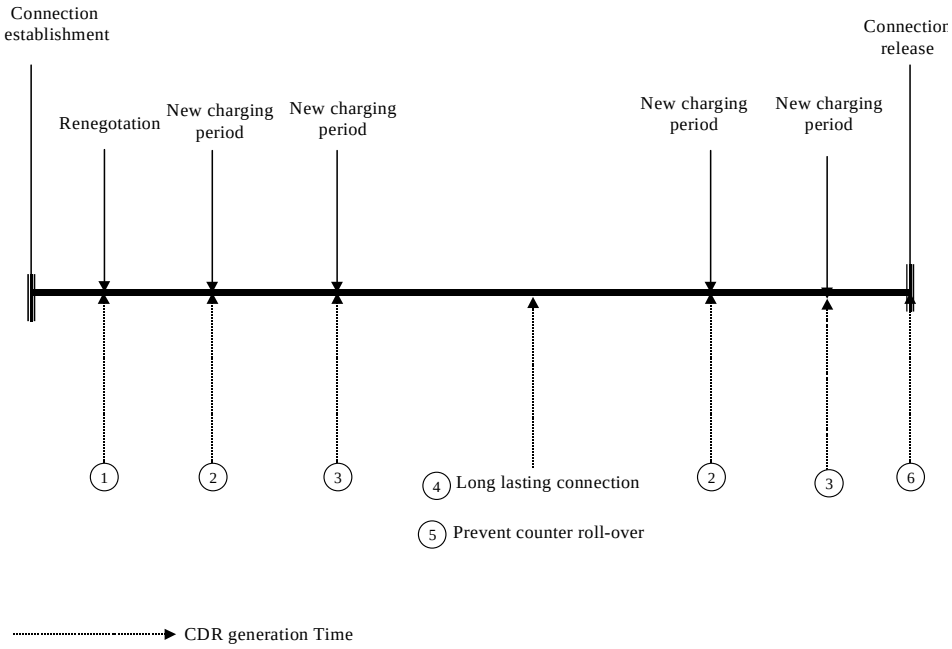


Figure 1. llustration of CDR generating moments.

Connection characteristics that may affect the charge

The charge elements described in 4.2 depend on a number of characteristics and parameters of the connection. Table 1 lists the characteristics that can be used in the charge elements reservation and usage. The column 'available' indicates at what stage of the connection lifetime the parameter becomes available.

Table 1/D.NGN Charging. Connection characteristics that may affect the charge and the parameters expected to be affected.

Characteristic	Reservation related charge affected through:	Usage related charge affected through:	When available?
QoS Class [*Y.e2e qos*]	CP_R	CP_U	At connection establishment
Traffic Descriptor(QoS parameter)(if Applicable 1)	CP_R	None	At connection establishment
Identification of the interfaces[1] relevant to charging (e.g., also used to determine distance)	CP_R	CP_U	At connection establishment

1 In this time these capabilities are under the study in relevant SG and standardization bodies
2 The relevant interfaces may be derived from the information provided about the connection end-points.

Table 1/D.NGN Charging. Connection characteristics that may affect the charge and the parameters expected to be affected.

Characteristic	Reservation related charge affected through:	Usage related charge affected through:	When available?
Connection start date and time	CP_R	CP_U	At connection establishment
For each successful renegotiation: date and time and renegotiated traffic descriptor(if applicable 1)	CP_R	None	After each modification (during the connection's active phase)
Connection end date and time	CP_R	None	At connection release
The number of user packets[2] admitted into the network to which QoS guarantees apply[3](if applicable 1)	None	$N_{admitted,0+1}$ or $N_{admitted,0}$ See Note	During the connection's active phase & at connection release
The number of user packets[3] admitted into the network to which no QoS guarantees apply[4](if applicable 1)	None	$N_{admitted,1}$ See Note	During the connection's active phase & at connection release
The number of user packets[3] delivered by the network to which QoS guarantees apply[4](if applicable 1)	None	$N_{delivered,0+1}$ or $N_{delivered,0}$ See Note	During the connection's active phase & at connection release
The number of user packets[3] delivered by the network to which no QoS guarantees apply[4](if applicable 1)	None	$N_{delivered,1}$ See Note	During the connection's active phase & at connection release
DSCP Code point	None	CP_U	Indicate priority
QoS Class	CP_R	CP_U	By SLA

Note: The letter *N* indicates a number of packets registered by the network. The index indicates whether that number relates to the number of packets admitted into the network or delivered by the network.

4.4 Viable combinations of charge elements

Viable charging schemes can be constructed by using one or more of the charge elements described in 4.2.

- The connection set-up charge element(SDP, NSIS, QoS capability of CPE) and the connection set-up attempt charge(if applicable) element can be applied to any connection, regardless of its traffic descriptor declared by user or QoS class.
- The connection modification charge element and the connection modification attempt charge element can be applied to any connection for which in-call modification of the connection parameters has been specified (if applicable)

[3] The number of user packets includes all the user-generated packets, i.e. including user-generated OAM packets(if Applicable).

[4] This parameter is required for each charging period separately (in combination with the start date and time and end date and time of the charging period.

- The traffic descriptor/QoS combination of a connection determines what charge elements can reasonably be used for reservation and usage. The reservation charge element is applied if reservations are made for the connection. Reservations are necessary to guarantee QoS commitments if they apply(such a capabilities are under the study in relevant SG in ITU-T and other standardization bodies)
- Reservations may be made also in other cases. Whether to make such reservations is an administration-specific choice. The usage charge element may be applied to connections to reflect the usage of network resources as a result of admitting packets into the network and delivering them. Such a usage based charge can be applied in case QoS commitments do apply, and in case no commitments apply.
- For supporting user request service, network operator may have different QOS mapping policy depending on their network infra structure.(See 7.2.6)

Viable charging schemes using the reservation charge element or the usage charge element or both are need to be studied for all relevant traffic descriptors and QoS classes.

5 Charging end-customers

The charges for services delivered to end-customers normally consist of the following components:

- Network access component
- Network utilization component

5.1 Network access component

The network access component is intended to cover the cost for providing the access to the service for the customer. Its establishment is administration-specific and is not addressed in this Document.

5.2 Network utilization component

The network utilization charges cover the costs related to the utilization of the network resources.

The charge units, charge elements, charge parameters and concepts described in Clause 5 apply to charging end-customers. The use of such elements and parameters and their values are administration-specific

6 Accounting between administrations

For accounting between administrations different approaches may be taken.

- Traditional accounting mechanisms may be used, possibly foregoing the calculation of settlements. It is for example possible that each provider charges only their respective end-customers, with no settlements established between providers.

- Accounting may be based on the charge units, charge elements, charge parameters and concepts described in Clause 5. Accounting according to such principles is detailed in the following sections.

The method of accounting, the use (or not) of the elements and their parameters as described in Clause 5 and their values, as well as the aggregation method/Weighted charging rate, are subject to agreement between the administrations involved.

6.1 Network access component

Accounting charges for access, in the case of administrations for interconnect access, are an administration-specific matter. Factors that determine the interconnect access charge may be similar to the factors in customer access charges. They are subject to agreement between the administrations involved.

6.2 Network utilization component

For accounting charges that apply to connections, the same charge elements are relevant that were described in 5.2. Viable combinations of these charge elements are given in 5.4.The application of each principle in accounting is subject to (bi-lateral) agreement of the administrations involved.
As accounting between administrations relates to large numbers of connections, a simplification of the charging is sensible. An administration need not be charged per connection, but may be charged for an aggregation of connections as described below.

6.2.1 Assumptions

Two assumptions underlie the description of accounting in this section. Figure 1 and Figure 2 are used in the description of the assumptions.

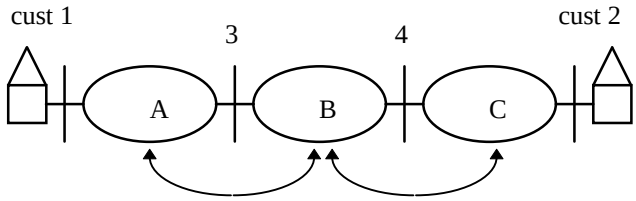


Figure 2Three administrations realize a connection through interconnection (cascaded organisation).

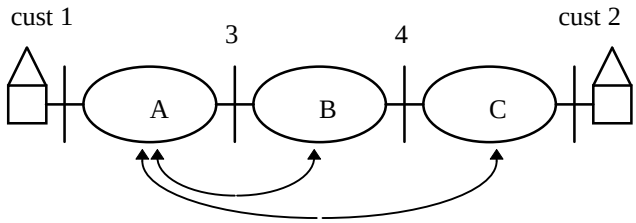


Figure 3 Three administrations realise a connection through interconnection (star organisation).

Assumptions:

1. Two administrations A and B that have an interconnect agreements, determine separately the accounting from A to B, and the accounting from B to A. It is up to the administrations to determine the settlement arrangements.
2. In the cascaded organization (Figure 2) any administration X realising a connection deals with only two parties adjacent to administration X:

   – the customer or the administration Y that submits the connection that starts at the edge of the network of that Administration X;

   – the customer or administration Z that continues the connection at the terminating edge of the network of administration X.

For example: Suppose that customer 1 in Figure 2 requests from administration A a (uni-directional) connection to customer 2, and that customer 1 is the charged party,

– Administration A will charge customer 1 for the connection from customer 1 to customer 2.

– Administration B will charge administration A for the connection portion from '3' to customer 2.

– Administration C will charge administration B for the connection from '4' to customer 2.

3. In the star organisation (Figure 3) there is one root organisation and one or more leaf organisations.

– The administration that submits the connection acts as root and deals with its customer and with each of the administrations acting as leaf. It realises the connection from the customer to the edge of network interfacing to the next administration.

– An administration acting as leaf deals only with the administration acting as root and, when applicable, with its customer. It realises the connection as requested by the root between two network edges or, when it is the destination administration, between a network edge and its customer.

For example: Suppose that customer 1 in Figure 3 requests from administration A a (uni-directional) connection to customer 3 , and that customer 1 is the charged party,

– Administration A will charge customer 1 for the connection from customer 1 to customer 2.

– Administration B will charge administration A for the connection portion from '3' to ‘4’.

– Administration C will charge administration A for the connection from '4' to customer 2.

Note: an administration will aggregate only the connections of a same administration that enter the network. Connections realised for different originating administrations are not combined together.

6.2.2 Aggregation within charge elements for accounting

To reduce the number of parameters stored and used for accounting between administrations, parameters of several connections may be aggregated and summarised into a smaller set of parameters to which a charge is applied. Aggregation takes places over an agreed aggregation period, for example one month.

The aggregation of connection parameters is described in the following sections for the three charge elements that build the charging options for NGN services. Section 7.2.2.1 describes aggregation for connection set-up charges. Section 7.2.2.2 describes aggregation for the reservation based charges. Section 7.2.2.3 describes aggregation for the usage based charges.

The sections each describe a generic aggregation that allows for differentiated accounting by connection type, distance region or zone and time of day. It is administration-specific whether to apply differentiation in accounting tariffs. Section 7.2.3 summarises the parameters that result from

the generic case of differentiated aggregation. Any less differentiated aggregation can be inferred from the parameters for the generic case presented in the table given in that section.

6.2.2.1Aggregation for the connection set-up charge element

Over the period of aggregation, all instances of connection set-up on the interconnection interface are cumulated. For an interface between two administrations A and B this implies that all connections set up by B at the request of A are counted. Separately, all the connections set up by A at the request of B are counted. Each of these two counts reflects the accounting information for the connection set-up charge element over the period of aggregation for one of the parties.

Aggregation of connection set-up charges may be differentiated depending on the characteristics of the connection that the administrations choose to affect the set -up charge element. Examples are the Connection mode and the charging period.

6.2.2.2Aggregation for the reservation based charge element

The reservation based element reflects resources reserved in the network for the connection. For a single connection the resource reservation is determined by a number of parameters: the QoS class, the traffic descriptor declared by user, and the associated traffic descriptor. The reservation related charge may also be affected by other connection characteristics as listed in Table 1, for example the distance between the applicable interfaces (region or zone) and the charging period.

For accounting, aggregation over several parameters for each connection is complex. To simplify aggregation of several connections, each connection is assigned to an aggregation group. Each aggregation group contains connections with the same value of the reservation charge parameter CP_R(.). For each connection, the value of the Chargeable Packet Rate (CPR) is multiplied by the connection duration; this yields a number of packets expressing the capacity that has been reserved for that connection. The resulting number of packets is added to the group's total of reserved capacity.

Administrations may differentiate the reservation charge parameter with respect to a number of characteristics. For example, it may be expected that the reservation based charge element may be differentiated according to the following connection characteristics (see Table 1).

- QoS class combination;
- connection mode;
- distance between the applicable interfaces (region or zone);
- charging period.

Therefore, accounting groups may be created for each relevant combination of these characteristics for which a different value of the reservation charge parameter CP_R(.) is used. Each of the relevant characteristics has a finite number of possibilities, if it is assumed that the distance between the applicable interfaces is distinguished by zones or regions[4]. Therefore, the number of aggregation groups required for aggregating the reserved capacity is finite. Per aggregation group the aggregation results in a single value expressing the aggregated reserved capacity. Multiplication with the reservation charge parameter CP_R(.) applicable to the group, allows conversion into monetary units.

[4] The case where distance is not used as a differentiating factor, can be viewed as a case with a single distance region or zone.

6.2.2.3Aggregation for the usage based charge element

The usage based element reflects resources used in the network for the connection. For a single connection the resource usage is determined by a number of parameters: the QoS class, the traffic descriptor, and the associated number of packets given in section 5.4. The usage related charge may also be affected by other connection characteristics as listed in Table 1, for example the distance between the applicable interfaces (region or zone) and the charging period.

For accounting, similar parameters are relevant. In view of the large numbers of connections to be accounted for at an interconnection interface between two administrations, aggregation of usage charging parameters is described below.

The number of delivered packets is not necessarily available if more than one administration is involved in the connection. Also, if it is available, it cannot be verified by both parties involved in interconnection administration at an interface. Therefore the number of delivered packets cannot be used in accounting.

To allow reconciliation of packet counts by both parties, it is recommended that the receiving administration also registers the number of packets discarded by the NPC(if applicable), if an NPC present at the INI, and that this number is aggregated and specified together with the corresponding number of packets admitted into the network.

Each connection yields a number of packets for the usage based charge in each charging period, at a given interface. To simplify aggregation of several connections, each connection is assigned to an aggregation group. Each aggregation group contains connections with the same value of the usage charge parameter(s) CP_U(.). For each connection, the relevant number of packets is added to the group's total number of packets. For each aggregation group, separate packet count values are used depending on whether QoS commitments pertain to the packets or not.

The traffic descriptor/QoS combination of a connection determines whether:

- QoS commitments pertain to all packets admitted into the network on a compliant connection;
- QoS commitments pertain to a subset of the packets admitted into the network on a compliant connection;
- QoS commitments do not pertain to packets admitted into the network.

The traffic descriptor/QoS combination of a connection thus determines whether one or two values are relevant to reflect the number of packets admitted into the network on the connection. The contribution of each connection to the aggregated usage based charge will be its relevant packet count values in the aggregation period.

Administrations may differentiate the usage charge parameter with respect to a number of characteristics. For example, it may be expected that the usage based charge element may be differentiated according to the following connection characteristics (see Table 1).

- Traffic descriptor/QoS class combination;
- connection mode;
- distance between the applicable interfaces (region or zone);
- charging period.

Therefore, accounting groups may be created for each relevant combination of these characteristics for which a different value of the usage charge parameter CP_U(.) is used. Each of the relevant characteristics has a finite number of possibilities, if it is assumed that the distance between the

applicable interfaces is distinguished by zones or regions[5]. Therefore, the number of aggregation groups required for aggregating the used capacity is finite. Per aggregation group the aggregation results in one or more total values expressing the used capacity. Multiplication with the usage charge parameter(s) CP_U(.) applicable to the group, allows conversion into monetary units.

6.2.3 Accounting parameters resulting from aggregation for network utilisation

The aggregated parameters collected for accounting at an interface pertain to:

- connection set-up charge element;
- reservation based charge element;
- usage based charge element.

For the connection set-up charge element, the aggregated parameter is the number of connection set-ups at that interface, in the given direction. Different charging periods (time of day) can be applied to the connection set-up charge element.

For the reservation based charge element and the usage based charge element, Table 3 gives an overview of the parameters yielded by the generic differentiated accounting described in sections 6.2.2.2 and 6.2.2.3. The shaded areas are not relevant for charging.

In summary: for both charge elements ‘reservation’ and ‘usage’, aggregation is performed separately by:

- QoS class and Traffic descriptor combination;
- connection mode;(if applicable)
- distance between the applicable interfaces (region or zone);
- charging period.

The aggregated parameters for the reservation based and the usage based charge elements are both expressed in packets. For ‘reservation’ they are the chargeable packets that are a result of resource reservations. For ‘usage’ they are actual packets admitted into the network. Thus the parameters are of a different nature, though expressed in a same unit.

An administration defines values for the charge parameter for reservation CP_R(.) and for the charge parameter(s) for usage CP_U(.) to be used for accounting for each combination of Traffic descriptor /QoS class, distance region or zone and charging period that it offers. This does not imply that such charge parameters must be different for each combination. In the simplest case, an administration may choose to use a single reservation packet price and a single usage packet price for all Traffic descriptor /QoS combinations it offers and for all charging periods.

7.2.4 Separate charge elements for accounting (F.F.S)

7.2.4.1 connection set-up charge element(F.F.S)

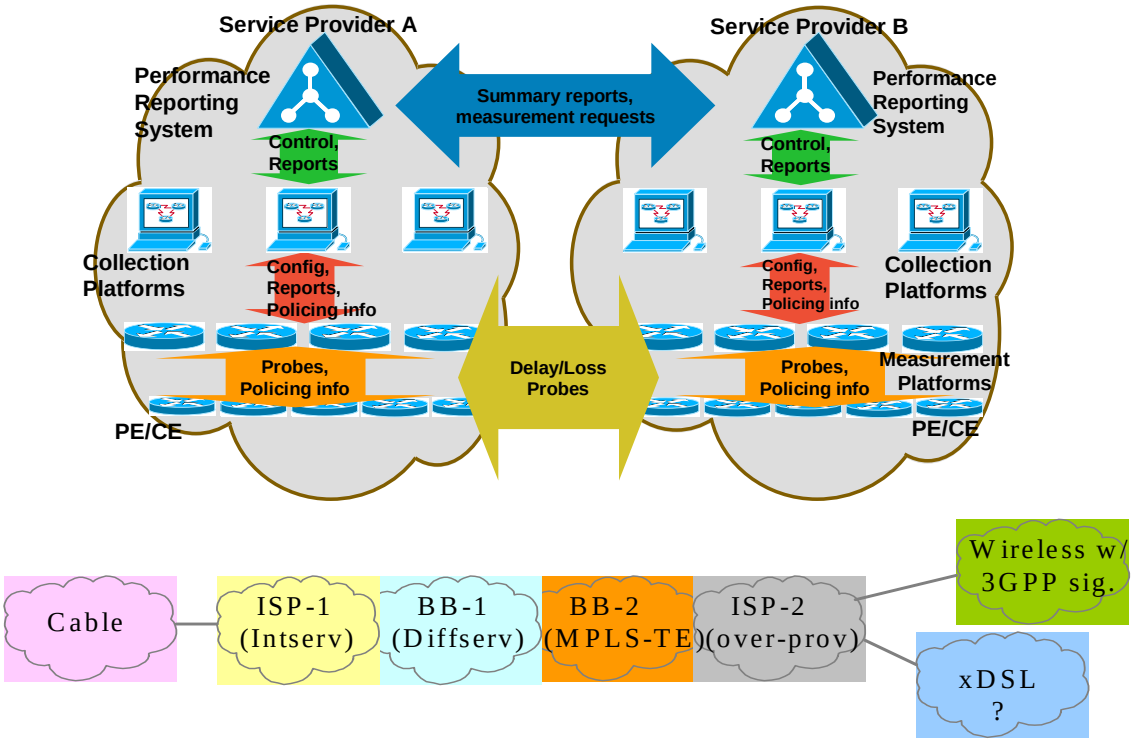
7.2.4.2 reservation based charge element(F.F.S)

[5] The case where distance is not used as a differentiating factor, can be viewed as a case with a single distance region or zone.

7.2.4.3 usage based charge element(F.F.S)

7.2.4.4 Accounting parameters aggregation for network utilisation(F.F.S)

7.2.6 Accounting parameters resulting from QOS Interworking



For supporting user request service, network operator may have different QOS mapping policy depending on their network infra structure

F.F.S