C&W Cayman Islands Response to ICTA/Telcordia Round 3 FLLRIC Interrogatories

2.1.1 There is an apparent inconsistency between the routing factor table and the results of "LRIC without markup" (in both the BU Output sheet of the Fixed and Mobile models and in the MLRIC sheet of the Consolidation model).

A service (S1) can only have "pure LRIC" different from zero with respect to a specific network element (NE) if that service puts any load on the NE (as indicated in the routing factor table). Otherwise, if S1 does not put any load on that NE, the removal of that service would not cause any reduction in total cost.

The other way is not necessarily true, as a service (S2) can put load on a specific NE but may have "pure LRIC" equal to zero with respective to that NE, so that the removal of that service may not necessarily cause any reduction in total cost (that is the case if the removal of S2 does not cause the re-dimensioning of the network – due to the presence of FCCs/Joint Costs).

Therefore, one service that does not consume one specific NE (as per the routing factor table) cannot have "LRIC without markup" different from zero with respect with that NE.

Please explain:

a. How can the 900-DOMESTIC TRANSIT have a "LRIC w/o markup" different from zero with respect to the NE 400-Interconnect Specific Costs (as per both the BU Output and MLRIC sheets) if the corresponding routing factor value is zero?

C&W response

Upon review, it appears the model was incorrectly sourcing the volumes associated with interconnect Specific Costs. The BU fixed model has now been updated to ensure that the 400-Interconnect Specific Costs NE draws its volume driver via the routing factors for all services. This means that, if the routing factor for 900-DOMESTIC TRANSIT is set to zero, then there is no LRIC without markup cost attributed to this service

The routing factors for 400-Interconnect Specific Costs have also been updated to reflect the fact that all services which use interconnection links should have a non-zero routing factor. In the case of 900-DOMESTIC TRANSIT, the new routing factor is set to "2" to reflect the need for two interconnect links.

b. How can the 900-FIXED CALL TO C&W MOBILE and 900-FIXED CALL TO OTHER MOBILE have "LRIC w/o markup" different from zero with respect to the NE 400-Interconnect Specific Costs (as per both the BU Output and MLRIC sheets) if the corresponding routing factor values are zero?

C&W response

Please see our response to interrogatory 2.1.1a above. The BU fixed model has been updated to ensure the Interconnect Specific Cost network element draws its volume driver via the routing factors for all services.

c. How can the 900-NATIONAL PAYPHONE have a "LRIC w/o markup" different from zero with respect to the NE 400-Access Local Loop (as per both the BU Output and MLRIC sheets) if the corresponding routing factor value is zero?

C&W response

Similar to the issue raised with 2.1.1a, it appears the model was incorrectly sourcing the volumes associated with Access Local Loop Costs. The BU fixed model has now been updated to ensure that the 400-Access Local Loop Costs NE draws its volume driver via the routing factors. This means that, if the routing factor for 900-NATIONAL PAYPHONE is set to zero, then there is no LRIC without markup cost from 400-Access Local Loop attributed to this service. In fact the routing factor for 900-NATIONAL PAYPHONE usage of 400-Access Local Loop Costs is set to "1" to reflect the access network resource actually used by this service.

2.1.2 There is an apparent inconsistency between the routing table and the way C&W allocates the FCCs/Joint Costs (what C&W calls the ISFC of each Sub Increment) into the services that form each Sub Increment.

a. Take for example the network element 400-Payphone Equipment. As per the routing factor table, this NE is consumed by only two services (900-NATIONAL PAYPHONE and 900-INTENATIONAL PAYPHONE) both of which are part of the G-Fixed traffic Sub Increment.

After making the appropriate filtering to the MLRIC sheet of the Consolidation Model, it can be seen that the access services (the services of the G-Fixed access Sub Increment) receive cost allocation of the ISFC of the G-Fixed access Sub Increment through the NE 400-Payphone Equipment. That means the NE 400-Payphone Equipment has FCCs/Joint Costs shared by the services in the G-Fixed access Sub Increment.

Please explain how that can be true if the only two services that consume (or put load on) that NE are in the G-Fixed traffic Sub Increment.

C&W response

The payphone products are categorised as part of the G-fixed traffic Sub Increment, but they make exclusive use of the network element 400-Payphone Equipment, for which the ISFC categorisation is "Access". We accept that this causes an anomaly whereby the payphone traffic product gives rise to GAccess costs, and so we have adjusted the model to recategorise 400-Payphone Equipment to have a "core" ISFC. This removes the anomaly.

b. On another example, according to the routing factor table in the Fixed model, the network 400-VAS Platform is not consumed by any 900-Level service individually, so that when the model sets each of the service volume to zero (either individually or in aggregate) the annualized and opex costs of that NE should remain unchanged.

After making the appropriate filtering to the MLRIC sheet of the Consolidation Model, it can be seen that the access services (the services of the G-Fixed access Sub Increment) receive cost allocation of the ISFC of the G-Fixed access Sub Increment through the NE 400-VAS Platform. That means the NE 400-VAS Platform has FCCs/Joint Costs shared by the services in the G-Fixed access Sub Increment.

Please explain how that can be true if none of the services in the G-Fixed access Sub Increment puts any load on the NE 400-VAS Platform.

C&W response

The 400-VAS platforms NE had an ISFC assigned to "access", owing to a transposition error in the model. This has now been changed, so that the ISFC costs are assigned to "core".

2.1.3   An apparent inconsistency can also be found when comparing the MLRIC sheet of the Consolidation model and the spreadsheets submitted in the file 07_06_01 Appendix VIII Part 3_FLLRIC_Round 2_Interrogs_conf.

Take for example the service 900-NATIONAL PAYPHONE. The values for "pure LRIC", Fixed/Joint Costs and Network Wide Common Costs in the MLRIC sheet (after making appropriate filtering) do not match with the ones shown in Appendix VIII (calculated through the process described in 2.1.6 of the second round interrogatories using the ABS_VAL sheet). Please explain why.

C&W response

There are two issues at play here. One is related to the inconsistencies connected to the routing factors, which is discussed above. The second is that the MLRIC sheet "sees" LRIC service costs unaffected by routing factors. For the final network costs of services, for each network element, the LRICs are summed across all services, and then applied to services via routing factors. When checking the final network costs of services, which are derived from Network Elements via routing factors, the ABS_VAL sheet is the easier sheet to look at. See more at our response to 2.1.11b.

2.1.4   In C&W's response to 2.1.9 of the second round interrogatories, C&W did not explain the criteria it used to establish which 900-Level services are part of the G-Fixed access Sub Increment (the access services) and which are part of the GFixed traffic (the traffic related services). The way C&W classifies and creates these Sub Increments may have a significant impact on the FCCs/Joint Costs of each Sub Increment.

One possible criteria could have been based on the resources (400-Level network elements - NEs) consumed by each service, or in other words, the NEs on which these services put significant load. For example, the services that put major load on the Line Sensitive NEs (400-Access Local Loop; 400-RSU Line Sensitive; 400-ADSL Equipment) could have been grouped into the G-Fixed access Sub Increment (900-ADSL RETAIL & WHOLESALE; 900-PSTN ACCESS RES & BUS; 900-ISDN ACCESS RETAIL), noting that some of these services also put load on Duration & Bandwidth Sensitive NEs (900-ADSL RETAIL & WHOLESALE) and other services in the G-Fixed traffic Sub Increment (900-DOMESTIC LEASED CIRCUIT RETAIL & WHOLESALE; 900-INTERNATIONAL PAYPHONE) also put load on Line Sensitive NEs.

Please explain the criteria used by C&W to establish which 900-Level services are part of the G-Fixed access Sub Increment (the access services) and which are part of the G-Fixed traffic (the traffic related services).

C&W response

The criteria used to determine which 900-level services are assigned into which increment are as follows:

1.   PSTN, ISDN and ADSL line rental services are regarded as access services, as they primarily use network components which physically form a part of the access network (eg, copper cable, DSLAM, exchange linecards).   This approach is consistent with international precedent.

2.   All remaining services which make use of the core network are regarded as traffic services. This includes aggregate products which make use of both access and core components such as leased lines and payphones. This is, again, consistent with international precedent.

2.1.5   Please explain how the Top-down MS Access model performs the calculations of the ISFC (FCCs/Joint Costs of Sub Increments G-Fixed Access and G-Fixed Traffic) and allocates these costs to the 900-Level services as shown in the 07_06_01 Appendix VIII Part 3_FLLRIC_Round 2_Interrogs_conf. Please use the data on the ISFC Worksheet of Appendix III of Interrog.1_CVRs (confidential)_f when providing that explanation.

   a. Take for example two services – 900-FIXED TO OLO and 900-PSTN ACCESS RES – and show:
      - How the TD MS Access model calculates the ISFC of G-Fixed Traffic and allocates it to 900-FIXED TO OLO.
      - How the TD MS Access model calculates the ISFC of G-Fixed Access and allocates it to 900-PSTN ACCESS RES.

C&W response

The TD Access model contains LRIC BU results calculated for:
   - **Individual product increments:** Increments are 900 level products. E.g. "900-FIXED CALL to OLO" and "900-PSTN ACCESS RES"
   - **Sub increments:** Increments are groups of 900 level products. E.g. "G-Fixed traffic" and "G-Fixed access".
   - **Total Increment:** Group of all 900 Products ("G-ALL-PROD").

All BU LRIC Results are calculated per:
   - **Increments:** as described above.
   - **400 level Network Elements**
   - **Cost Elements:** Annualised Cost, GRC, Operating Cost

When the LRIC cost calculation is finished, then the Markup calculation proceeds.

In considering the application of markup, it is necessary to consider the full range of increments and product. So the example products ("900-FIXED CALL to OLO" and "900-

PSTN ACCESS RES") are included in the following analysis along with all other products and increments.

The ISFC costs are part of "G-Fixed traffic" and "G-Fixed access" joint costs. The fixed joint costs are calculated as the difference of:

- LRIC values of "G-Fixed traffic" and "G-Fixed access" Sub-Increments and
- The LRIC values of 900 level Increments of Products that belong to these 2 groups (as described by following numbers).

Example for Operating Costs:

Total Fixed Joint Costs			
INCREMENT_ID	**ELEMENT_TYPE**	**ELEMENT_ID**	**SumOfVALUE**
G-Fixed access	C	Operating Cost	###
G-Fixed other	C	Operating Cost	###
G-Fixed traffic	C	Operating Cost	###
G-Mobile traffic	C	Operating Cost	###
G-Subscriber	C	Operating Cost	###

The table above contains a summary of the following detailed table:

Details of Fixed Joint Costs					
INCREMENT_ID	**ENTITY_ID**	**EnT**	**ELEMENT_ID**	**EIT**	**LRIC Value**
G-Fixed access	100-Administer Government & International Relations – Retail	CC	Operating Cost	C	###
G-Fixed access	100- Advertising	CC	Operating Cost	C	###
G-Fixed access	100- Bad Debts	CC	Operating Cost	C	###
G-Fixed access	100 – Branding	CC	Operating Cost	C	###
G-Fixed access	100- Collect Revenue	CC	Operating Cost	C	###
G-Fixed access	100- Credit Control	CC	Operating Cost	C	###
G-Fixed access	100 – Customer Relations	CC	Operating Cost	C	###
G-Fixed access	100 – Finance, accounting and budgeting	CC	Operating Cost	C	###
G-Fixed access	100 – Fleet Expenses - Retail	CC	Operating Cost	C	###
G-Fixed access	100 – Human Resources – Retail	CC	Operating Cost	C	###
G-Fixed access	100 – INTER-Region Recharges IN	CC	Operating Cost	C	###
G-Fixed access	100 – INTER-Region Recharges IN	CC	Operating Cost	C	###
G-Fixed access	100 – Manage Admin Buildings - Retail	CC	Operating Cost	C	###
G-Fixed access	100-Manage Corporate Affairs - Retail	CC	Operating Cost	C	###
G-Fixed access	100-Manage Security	CC	Operating Cost	C	###
G-Fixed access	100- Manage Switchboard - Retail	CC	Operating Cost	C	###
G-Fixed access	100 – Operate Fleet - Retail	CC	Operating Cost	C	###
G-Fixed access	100 – Prepare Quotations for Retail Sales	CC	Operating Cost	C	###
G-Fixed access	100 – Procurement & Stores – Retail	CC	Operating Cost	C	###
G-Fixed access	100 – Product Development & Management	CC	Operating Cost	C	###
G-Fixed access	100 – Property Rentals - Retail	CC	Operating Cost	C	###
G-Fixed access	100 - Provide Business Support Systems	CC	Operating Cost	C	###
G-Fixed access	100-Provide Legal Services – Retail	CC	Operating Cost	C	###
G-Fixed access	100-Provide Public Relations - Retail	CC	Operating Cost	C	###

5

Details of Fixed Joint Costs					
INCREMENT_ID	**ENTITY_ID**	**EnT**	**ELEMENT_ID**	**EIT**	**LRIC Value**
G-Fixed access	100-Provide Strategy & Policy - Retail	CC	Operating Cost	C	###
G-Fixed access	100 – Retail Sales	CC	Operating Cost	C	###
G-Fixed access	100 – Revenue Assurance	CC	Operating Cost	C	###
G-Fixed access	100 – Schedule Installations Requested by	CC	Operating Cost	C	###
G-Fixed access	100 – Schedule Repairs of Faults Reported	CC	Operating Cost	C	###
G-Fixed access	100 – Security Expenses – Retail	CC	Operating Cost	C	###
G-Fixed access	100-Sponsorship	CC	Operating Cost	C	###
G-Fixed access	100- TEC	CC	Operating Cost	C	###
G-Fixed access	100 – Telephone Directories	CC	Operating Cost	C	###
G-Fixed access	400-Access Local Loop	NE	Annualised Cost	C	###
G-Fixed access	400-Access Local Loop	NE	Opex	C	###
G-Fixed access	400-Access Local Loop	NE	OVERHEAD OPEX	C	###
G-Fixed access	400 – ADSL Equipment	NE	Annualised Cost	C	###
G-Fixed access	400 – ADSL Equipment	NE	Opex	C	###
G-Fixed access	400 – ADSL Equipment	NE	OVERHEAD OPEX	C	###
G-Fixed access	400-Payphone Equipment	NE	Annualised Cost	C	###
G-Fixed access	400-Payphone Equipment	NE	Opex	C	###
G-Fixed access	400-RSU line sensitive	NE	Annualised Cost	C	###
G-Fixed access	400-RSU line sensitive	NE	Opex	C	###
G-Fixed access	400-RSU line sensitive	NE	OVERHEAD OPEX	C	###
G-Fixed access	400-VAS platforms	NE	Annualised Cost	C	###

Etc.

Joint Costs are allocated to individual 900 Level Product Increments based on Economic LRIC Costs without Markup of those Product Increments that belong to these groups. For example Fixed Access Joint Costs will be allocated to Fixed Access Product Increments.

So the Fixed Joint Costs are allocated to products based on following percentages, with the example products highlighted:

MARK_select_Markup_Perc_Joint		
ENTITY_GROUP	**INCREMENT**	**Percentage**
G-Fixed access	900-PSTN ACCESS BUS	###%
G-Fixed access	900-PSTN ACCESS RES	###%
G-Fixed access	900-ADSL RETAIL	###%
G-Fixed access	900-ADSL WHOLESALE	###%
G-Fixed traffic	900-DOMESTIC LEASED CIRCUITS RETAIL	###%
G-Fixed traffic	900-DOMESTIC LEASED CIRCUITS WHOLESALE	###%
G-Fixed traffic	900-DOMESTIC TRANSIT	###%
G-Fixed traffic	900-FIXED CALL TO C&W MOBILE	###%
G-Fixed traffic	900-FIXED CALL to OLO	###%
G-Fixed traffic	900-FIXED CALL TO OTHER MOBILE	###%
G-Fixed traffic	900-FIXED INTERNATIONAL INCOMING	###%
G-Fixed traffic	900-INTERNATIONAL TRANSIT to OLO	###%
G-Fixed traffic	900-NATIONAL PAYPHONE	###%

These percentages were calculated based on following Economic costs; again, the example products are highlighted:

Economic Costs of Fixed Access and Traffic Products		
ENTITY_GROUP	**INCREMENT**	**Details**
G-Fixed access	900-PSTN ACCESS BUS	###
G-Fixed access	900-PSTN ACCESS RES	###
G-Fixed access	900-ADSL RETAIL	###
G-Fixed access	900-ADSL WHOLESALE	###
G-Fixed traffic	900-DOMESTIC LEASED CIRCUITS RETAIL	###
G-Fixed traffic	900-DOMESTIC LEASED CIRCUITS WHOLESALE	###
G-Fixed traffic	900-DOMESTIC TRANSIT	###
G-Fixed traffic	900-FIXED CALL TO C&W MOBILE	###
G-Fixed traffic	900-FIXED CALL to OLO	###
G-Fixed traffic	900-FIXED CALL TO OTHER MOBLE	###
G-Fixed traffic	900-FIXED INTERNATIONAL INCOMING	###
G-Fixed traffic	900-INTERNATIONAL TRANSIT to OLO	###
G-Fixed traffic	900-NATIONAL PAYPHONE	###

Etc.

b. There is a typographical error on the files submitted on Appendix VIII, as ISFCs cannot be positive. These positive values have been summed to the other costs (negative values for "pure LRIC" Retail and TD Common) and compromised the Total cost- Retail. Please correct this error and resubmit Appendix VIII file.

- Please also correct (and send a separate spreadsheet for) the 900-PSTN ACCESS RES previously sent on the response to question 2.1.6 d).
- Please also send the 900-DOMESTIC LEASED CIRCUIT WHOLESALE (which is missing).

C&W response

Please find the updated versions of 900-PSTN ACCESS RES and 900-DOMEST LEASED CIRCUIT WHOLESALE costings associated with round 2 interrogatory response 2.1.6 in Appendix I: Service Costings. Please note that the latter is entitled DPLC WHOLESALE.

Also, we note that The RET_VAL pivot table contained an error in that the sign of the included ISFC values were reported in contradiction to the convention adopted in the model. This has been corrected, and now the RET_VAL pivot table ISFC values carry a negative sign consistent with the model.

2.1.6 Regarding C&W's response to second round question 2.5.4, please provide an example on how the Top-down MS Access model performs the calculation of the contribution of

the non-network cost categories classified as "Apportioned Overheads – Retail" to the "pure LRIC" of a service/increment.

Take for example the cost category "100-Finance, accounting and budgeting – Retail". Please show how the TD MS Access model calculates its contribution to the "pure LRIC" of – for example – the service/increment 900-Fixed Call to C&W Mobile.

C&W response

"100-Finance, accounting and budgeting – Retail" Category is the first CCR (Cost-Cost relationship). This CCR is calculated in the 18th Cost Relationship (CVR/CCR). The LDA table gives the definition of this CCR and also the principles for how the driver is calculated:

ORDER	DRIVER_ENTITY	DRIVER_ELEMENT	AFFECTED_ENTITY	AFFECTED_ELEMENT	GRAPH_NAME
			LDA Table		
100	G-900-ALL RETAIL SERVICES	Volume - Calls	100-Retail Billing	Operating Cost	CVR_05
200	G-900-ALL RETAIL SERVICES	Revenue Total	100-Credit Control	Operating Cost	SLTO
300	G-900-ALL RETAIL SERVICES	Revenue Total	100-Collect Revenue	Operating Cost	SLTO
400	G-900-ALL RETAIL SERVICES	Revenue Total	100-Revenue Assurance	Operating Cost	SLTO
500	G-900-ALL RETAIL SERVICES	Volume - Calls	100-Respond to Customer Queries	Operating Cost	CVR_03
600	G-900-ALL RETAIL SERVICES	Revenue Total	100-Product Development & Management	Operating Cost	SLTO
700	G-900-NEW CUSTOMER SALES	Revenue Total	100-Retail Sales	Operating Cost	SLTO
800	G-900-NEW CUSTOMER SALES	Revenue Total	100-Prepare Quotations for Retail Sales	Operating Cost	SLTO
900	G-900-INSTALLED & REPAIRED	Revenue Total	100-Schedule Repairs of Faults Reported by Customers	Operating Cost	SLTO
1000	G-900-INSTALLED & REPAIRED	Revenue Total	100-Schedule Installations Requested by Customers	Operating Cost	SLTO
1100	G-900-KEY ADVERTISED SERVICES	Revenue Total	100-Advertising	Operating Cost	CVR_02
1200	G-900-ALL RETAIL SERVICES	Revenue Total	100-Customer Relations	Operating Cost	SLTO
1300	G-900-ALL RETAIL SERVICES	Revenue Total	100-Branding	Operating Cost	CVR_04
1400	G-900-ALL RETAIL SERVICES	Revenue Total	100-Telephone Directories	Operating Cost	SLTO
1500	900-Mobile Subscriber	G-ALL-VOLUMES	100-Sell Mobile Handsets	Operating Cost	SLTO
1600	900-Mobile Subscriber	G-ALL-VOLUMES	100-Provide Mobile Retail Services	Operating Cost	SLTO
1700	900-CPE	Revenue Total	100-CPE Sales, Installation and Maintenance	Operating Cost	SLTO

LDA Table					
ORDER	DRIVER_ENTITY	DRIVER_ELEMENT	AFFECTED_ENTITY	AFFECTED_ELEMENT	GRAPH_NAME
1800	G-100-RETAIL EXPENSES	Operating Cost	100-Finance, accounting and budgeting - Retail	Operating Cost	SLTO

Etc.

The Driver of "100-Finance, accounting and budgeting – Retail" Category is Operating Cost of "G-100-RETAIL EXPENSES". "G-100-RETAIL EXPENSES" Entity groups contains 17 Entities:

Definition of G-100-RETAIL EXPENSES
ENTITY_ID
100-Advertising
100-Branding
100-Collect Revenue
100-CPE Sales, Installation and Maintenance
100-Credit Control
100-Customer Relations
100-Prepare Quotations for Retail Sales
100-Product Development & Management
100-Provide Mobile Retail Services
100-Respond to Customer Queries
100-Retail Billing
100-Retail Sales
100-Revenue Assurance
100-Schedule Installations Requested by Customers
100-Schedule Repairs of Faults Reported by Customers
100-Sell Mobile Handsets
100-Telephone Directories

LRIC values of these 17 entities are calculated in first CVR's/CCR's (as could be seen in LDA table above) – i.e. before "100 Finance…" Category.

The LRIC driver value of the Operating Costs of the "G-100-RETAIL EXPENSES" for "900-FIXED CALL TO C&W MOBILE" Increment is ### Percent of the Total FAC costs. This CCR is using SLTO graph – i.e. straight line through origin, so the Affected Percentage is also ### Percent of the Total FAC costs. So the LRIC value (without Markup) of the Operating Costs of the "100-Finance, accounting and budgeting – Retail" is ### Percent of its FAC value (which is equal to ###). So its LRIC value is equal to ###.

2.1.7   In section 5.1.4 of C&W's response to ICTA/Telcordia second interrogatory, C&W states that the MLRIC Values sheet values of the Consolidation model were obtained from the following models:

- MS Access Top Down Model (treats retail costs)

- BU Fixed and Mobile Models for GRC, Annualized Cost and Network Opex

- Consolidation File, Expense Factor sheet for the Overhead expenses allocated to Network Elements.

In our analysis, the MLRIC Values sheet contains only the network capital and opex values, and all top down LRIC retail costs calculated by the retail cost model are in the RET_VAL sheet of the Consolidation Model.

Please confirm whether the MLRIC Values sheet contains any retail cost information obtained from the MS Access Top Down Model.

C&W response

This is correct. The MLRIC does not contain any retail cost information. Its inclusion in our response was an inadvertent misstatement.

2.1.8   In section 5.1.6 g) of C&W's response to ICTA/Telcordia second interrogatory, C&W states that all cost values on the list provided in that question – including Retail costs (TD analysis) and Markup for TD Common Costs – can be found in the Reconciliation sheet of the Consolidation Model.

In our analysis, the Reconciliation sheet contains only the network capital and opex values, and all top down LRIC retail costs calculated by the retail cost model are in the RET_VAL sheet of the Consolidation Model.

Please confirm whether the Reconciliation sheet contains any retail cost information (and markups) obtained from the MS Access Top Down Model.

C&W response

This is correct. The Reconciliation sheet does not contain any retail cost information. Its inclusion in our response was an inadvertent misstatement.

2.1.9   In C&W's response to question 4.2.1 of the second round interrogatories, C&W provided the cost components for the "site costs" of the Mobile network model. The site costs for sectorised cell described on that document (CI$###) is significantly lower that the site costs for sectorised cell input into the Mobile model spreadsheet (CI$###).

Please explain why and/or make the appropriate corrections to the model.

C&W response

When Telcordia asked C&W to document its costs for site costs, C&W used the latest cost data available to it. The earlier figure of CI$### was based on information from 2003.

This new site cost information is included in the appended model.

2.1.10 There is an apparent inconsistency between the routing factor table and the extract of the MLRIC Values sheet of the Consolidation shown in Figure 1b of section 2.7.1 of C&W's response to ICTA/Telcordia second interrogatory on page 3.

As per the routing factor table, the services 900-ADSL RETAIL and 900-ADSL WHOLESALE do not consume (or put any load on) the NE 400-Access Local Loop. Therefore, the pure LRIC of these services with respect to the NE 400-Access Local Loop are "zero".

Please explain how these two services (900-ADSL RETAIL and 900-ADSL WHOLESALE) can receive proportionate allocations of the ISFC (FCCs/Joint Costs) of the Sub Increment G-Fixed access through the NE 400-Access Local Loop based on their pure LRIC values – as stated on paragraph 3 of page 3 of the same document – if these pure LRIC values (with respect to NE 400-Access Local Loop) are equal to zero.

C&W response

The service 900-ADSL RETAIL has a pure LRIC value, which comes from its use of the network element 400-ADSL Equipment only. The percentage allocations used for the application of markup are calculated in the "Markup Perc" worksheet. In column D can be seen the LRIC without markup values for the products in the Fixed Access increment. The Fixed Access joint costs are allocated proportionally to these values – to service increments (as the methodology is service LRIC). However, the marked up costs are can also be viewed at a network element level, and this information is shown in the "ABS_VAL" sheet. This is the information used to derive the network element costs and unit costs shown in the "Fixed network costs" sheet.

2.1.11 On page 5 of C&W's response to ICTA/Telcordia second interrogatory (section 2.7.1), C&W states that "to obtain the exact amount of the DLRIC (ISFC) markup, we subtract the pure LRIC values for the PSTN Access residential and business services. That is, as shown above, ### - ### - ### = ###".

This is true only because (as stated above) the pure LRIC of the services 900-ADSL RETAIL and 900-ADSL WHOLESALE (as well as the other access service 900-ISDN RETAIL) with respect to the NE 400-Access Local Loop are "zero". Otherwise, the model would have to also subtract these values from the LRIC of G-Fixed access increment with respect to the NE 400-Access Local Loop.

C&W then states that "This value is then distributed equi-proportionately across the following four services …". This is done based on the Markup Perc sheet of the Consolidation file …".

11

a. Telcordia understands C&W's BU models should take into account the fact that not all services in the G-Fixed access Sub Increment share the use of the same network elements in the same way. For example, although the 900-ADSL RETAIL has "pure LRIC" different than zero with respect to the NE 400-ADSL Equipment, it is receiving cost allocations from the ISFC (FCCs/Joint Costs) of the G-Fixed access Sub Increment through other Network Elements (400-RSU line sensitive, 400-VAS platforms, 400-Payphone Equip, 400-Access Local Loop) as these other NEs have FCCs/Joint Costs shared by the other services defined in the G-Fixed access Sub Increment – noting that the 900-ADSL RETAIL does not consume (or put any load on) any of these NEs. Please justify.

C&W response

The service LRIC methodology adopted allocates joint costs within the access increment on an equiproportionate basis, using the LRIC economic costs without markup as a driver. This is done without reference to network elements, as discussed in the response to Interrogatory 2.1.10, although the service-increment LRIC may also be viewed by network element.

b. The Markup Perc sheet determines the allocation percentages of the ISFCs for each 900-Level service. Please explain why these allocation percentages were not calculated on a network element by network element basis (in which case the ISFC of the Sub Increment with respect to a specific network element would be distributed equi-proportionally based on LRIC values (with respect to that same network element) of the services that belong to that Sub Increment).

C&W response

The LRIC methodology used for 900 level services is service LRIC. However, the markup costs may be viewed either by network element or by service increment. While the markup allocation is to service increments, the resulting LRIC+ costs are aggregated by network element rather than by service. These network element costs are then allocated to services via routing factors. This last stage is not a part of the LRIC methodology, but is a transparent, cost-causal way of relating the NE costs to services based on volumes and usage.

c. Please explain how the markup percentages on column H, lines 61, 62, 69, 70 (as in the example provided by C&W) were derived.

C&W response

See C&W's response to question 5.1.10 part b of the 2nd round Interrogatories repeated here for ease of reference:

> "b   *Please explain how the calculations on the Markup Perc worksheet were performed, i.e. how C&W derived the markup values/percentages to be distributed among the individual 900-Level Products based on the total markup values allocated to each 400-Level Network Element (Total Markup worksheet).*
>
> *2nd round C&W Response*
>
> The terms captured in this sheet may be a bit confusing as they add to the already burdened use of terms used to define common costs. Nonetheless, the following gives an explanation to the terms and how the values are calculated:

Round 3 Telcordia Interrog Responses

REDACTED VERSION

'Joint Economic Costs' refers to Cell Range D2:G2 - the range calculates the total pure LRIC of the services within each of the four increment groups. These values are not joint cost in the manner define throughout this document, but are instead used to allocate the increment joint costs (ISFCs) calculated in cell range L2:O2. These values are obtained from the 'BU_Results' sheet and stored in column 'C'.

Columns H-K calculates the percentage values of the pure LRIC allocations. For example, cell I19 calculates a value of 2.76% which derived from E19/E2, the pure LRIC value (G-Fixed Traffic) allocated to service '900-DOMESTIC LEASED CIRCUITS RETAIL' (27,210) divided by the total value pure LRIC value of (987,568).

'Allocated Joint EC', refers to Cell Range L2:O2 - the range calculates the total increment joint costs (ISFC) of each of the four increment groups based on the values in the Total Mark Up page. Note: these appear to calculate economic costs by multiplying the GRC by the WACC, but this is a redundant term in the formula which carries a value of zero.

'Fixed Common EC with JC and Mobile EC with JC'

The cells in range L4:O73 apportion the values in range L2:O2 in proportion to the pure LRIC. These are recorded in columns P to R, and a total value calculated in range P2:R2. This may be considered to be DLRIC.

'Common Percentage'

The cells in columns S to U calculate the proportion of total 'DLRIC' that is allocated to each service. This is used to allocate the fixed common cost in the columns headed 'Common Fixed Allocated' and 'Common Variable Allocated'."

d. Please explain the differences between the data provided on lines 4 to 5 and the data on lines 69 to 70 of the Markup Perc sheet of the Consolidation file.

C&W response

The product names in rows 4 to 5 are redundant product name listings, as such all product names that are redundant have been removed from this sheet. See appended consolidation file.

2.1.12 Please note that the value on "LRIC value Annualized Capital Cost – Local Loop" in the Figure "Summary BU Pure LRIC, DLRIC and FLLRIC results for PSTN Access residential service" on page 10 of the document on C&W's response to ICTA/Telcordia second interrogatory (section 2.7.1) do not match with the value of "Pure LRIC Annualized Capital Cost – PSTN Access Res – Local Loop" on the Figure "900-PSTN ACCESS RES" on page 3 of the document on C&W's response to ICTA/Telcordia second interrogatory (section 2.1.6). Please also note that the "per-unit cost of NE approach" implicitly assumes that the cost function derived by the network design algorithms for each NE (which describes how the costs of that NE varies with the demand volume of each NE) is a straight line.

Please make the appropriate corrections and resubmit the spreadsheets of item 2.1.6 for each 900-Level service describing its Pure LRIC, FCC/Joint Costs, Common costs (Network and Retail).

C&W response

Please find the attached revised spreadsheets in Appendix 1: Service Costings.

2.2.1   In C&W's response to item 2.3.1 of ICTA/Telcordia second interrogatory, C&W provided a table detailing the variances in the asset lives assigned in the model based on C&W's experience and benchmarks for analogous facilities found in public studies. C&W later stated that for the remaining kit (assets not included in the table), C&W does not have the same type of vendor generational information.

   a.   C&W proposed that the asset life of NGN equipment should be 5 years. This is considerably lower than the asset lives that can be found in numerous LRIC studies for Digital Switching equipment (10-12 years) (as the ones of Europe Economics and PTS provided by C&W in the Background Document). Please justify why these asset lives are so different. Does C&W believe the NGN equipment will not stay in-service (and its economic value will be "zero") after 5 years?

C&W response

NGN equipment is required to operate in an environment that demands the ability to accommodate rapid change and which results in the advancement of the End of Life status for this particular type of equipment. .The much shorter life of NGN equipment is driven by the changes in software required to increase capability to deal with demand changes.   As the demand for telecom features become more complex (e.g. call screening, Centrex, VOIP), there is a need to upgrade the software on a regular basis (so software fees are continuous).   This is why the asset life is so much shorter than the primarily hardware-based PSTN kit and it is not appropriate to draw parallels for the lifespan of these equipment types.

There is of course a hardware component to the NGN equipment, but the need to change the hardware (more speed, more memory) is often required to handle the increasing complexity of the software. The core hardware component in our NGN has been the CS2K.   In other C&W jurisdictions, ###############################
##, it is being replaced this year with new hardware.   Thus, we believe 5-6 years is a reasonable assumption for this equipment.

   b.   C&W initially proposed that the asset life of DSLAM equipment should be 3 years, and later agreed to have the 3 year DSLAM life bumped up to 5 years (as with respect to DSLAM, life in service can continue beyond the point at which the manufacturer produces and supports the equipment). Does C&W believe the DSLAM

equipment will not stay in-service (and its economic value will be "zero") after 5 years? Please justify.

C&W response

Our experience has been that DSLAM equipment after 5 years cannot deliver the services that are demanded of it, hence the need to replace it. For example, the ############## equipment we purchased 5 years ago cannot deliver the line speeds we are being asked to deliver today.

By way of corroboration, although benchmarks from regulatory proceedings remain very difficult to find, we note that in a recent proceeding in Massachusetts, a regulatory cost model developed by HAI Consulting, which has extensive experience producing LRIC costing models for US federal and state regulators, used 5 years as the default asset life for DSLAMs. See, page 10 of the Inputs Portfolio to the HAI XDSL Adjunct Model at

http://www.mass.gov/Eoca/docs/dte/telecom/01-20/mercerexhibit9.pdf

2.2.2   In C&W's response to item 2.3.1 of ICTA/Telcordia second interrogatory, C&W stated that the launch and discontinuance of a network element (e.g. management system) can serve as a proxy measure for asset life. C&W then provided the three most recent instances of network management discontinuances from C&W's vendors ####### ## and compared them with the relevant launch dates. C&W used that information to show that 5 years is a reasonable economic life for the network management system.

Please provide the underline launch dates of network management systems that are still in use by C&W and identify which of those systems are the three oldest management systems that are still in use.

Please also identify among all network management systems the three most expensive ones (in terms of acquisition price).

C&W response

We have not been able to identify a discrete acquisition price for many of the element managers that are currently in use. However, we can give information on some of our most significant managers. With respect to launch dates in particular, meaningful dates are also difficult to come by as often products will be launched under a brand-name that remains the same over a long period although the software and hardware changes radically.

The element manager for SDH transmission networks, ############ is a good example of this. The original version of this manager under the ######### brand dates back to the mid-90s. However, the software has been repeatedly revised and upgraded. For

16

example, since its introduction in October 1999 in Cayman, the ##### software has been upgraded five times, on average every year and a half. Every other software upgrade there is usually some form of hardware replacement. This is replacement process is similar to that experienced in 2.2.1a.

We currently utilizes ######### as a manager of element managers. ######### was originally released in 2000, but this does not mean that what C&W has installed bears much resemblance to the 2000 version. It has been upgraded or relaunched a few times, in 2001, 2002 , 2005 and 2006. See ####################################

Similarly, we have deployed the ##### DSLAM element manager. The original version of this appears to have been launched as part of the ######### suite in 1999. However, this suite was upgraded in 2002, 2003, 2004 and 2005 (See ##). C&W installed the element manager in May 2004, but replaced with new hardware and software September 2006.

2.2.3   In C&W's response to item 2.4.1 b) of the first interrogatory, C&W stated that the switch from the simple annuity approach to a titled annuity approach that would capture economic depreciation better could be implemented by simply adding the following line bellow the simple annuity formula and adjusting the appropriate links.

=Capex*(WACC-relevant price trend assumption)*

(1+relevant price trend assumption)^(1-1)/

(1-(1+relevant price trend assumption)^simple annuity result/

(1+WACC)^simply annuity result)

Please explain what C&W means with "simple annuity result" and show how that formula was derived.

C&W response

The simple annuity and tilted annuities, respectively, can be expressed as:

$$A = P \ x \ \ k(1+k)^n / ((1+k)^n - 1) \ \text{and}$$

$$A = P \ x \ (k-r) \ / \ [1-\{(1+r)^n / (1+k)^n\}]$$

Where:

A = annualised cost

P = purchase cost of asset (capex)

k = WACC

n = asset life

r = annual price change of asset

The term "simple annuity result" in our interrogatory response should of course read "asset life". We apologise for the error. In its most recent version of the model, C&W has inserted additional rows in the asset sections of the bottom-up models to allow for a tilted annuity approach to annualized costs. A toggle in the "Cost Summary and Mapping Sheet" in both the fixed and mobile models allow for the user to set which approach to use. This inclusion in the model makes the relationship between the two explicit.

2.3.1   There appears to be an error in the expense factor calculation formulas in the Expense Factor sheet of the fixed network model, as it ignores the network element '400-Data Network Equipment' and this network element is a component of the driver groups of 'Fixed Network-All', 'Other platforms' and 'Fixed Network-In buildings', which drives many of C&W's expense factors.

Please make the appropriate corrections to the model.

C&W response

These changes have been made in the updated version of the model.

2.3.2   There is an apparent inconsistency between the Expense Factor sheets of the BU Fixed and Mobile models and the ABS_VAL sheet of the Consolidation model.

The Expense Factor sheets of the BU fixed and mobile models contain the formulae used to assign network operating expenses to the network elements of the fixed and mobile networks, respectively. The Expense Factor sheet of the Consolidation model contains the formulae used to calculate overhead expense factors and assign overhead costs to the network elements of both the fixed and mobile networks.

The ABS_VAL sheet of the Consolidation model, on the other hand, contains the bottom-up LRIC calculated results from the MLRIC worksheet by Network Element and By Cost Type (Annualized cost; GRC; Opex and Overhead opex) with or without markup.

If one sets the "Mark-up Type" of the ABS_VAL sheet to "All", one should expect to find the Total GRC, Annualized cost, Opex and Overhead opex of each Network Element of the fixed and mobile networks, and these values should be equal to:

- The GRC and Annualized cost of each Network Element as found out in rows 2 to 5 of the Expense Factor sheet of the Fixed and Mobile models (as these rows bring the pre calculated GRCs from the BU models).
- The Opex value assigned to each Network Element as found out in row 106 of the Fixed model and in row 71 of the mobile model, as these rows capture the results of the expense factor allocations to each Network Element.
- The Overhead opex value assigned to each Network Element as found out in rows 98 to 100 of the Consolidation model (as these rows capture the results of the overhead expense factors allocations to each Network Element.

Please explain why some of the values of Opex and Overhead opex in the ABS_VAL sheet do not match with the respective values in the Expense Factor sheets.

C&W response

This problem would occur if changes were made to the bottom up files that affected the investment costs of the network elements but which were not reflected in the consolidation file. That is, the consolidation file must be updated by running it twice, once to update the consolidation file expense factor sheet with any affected investment costs from the BU models and a second time after reloading the actual expense factors of the consolidation file. This has been done in the appended models.

2.4.1   Please describe how the figure of 12.39 percent for the Large Co. Stocks is computed, indicate if there is any weighting of the values in the calculation (such as the total equity of each company) and if Ibbotson describes the calculation, please provide a copy of the description.

C&W response

On page 59 of the Ibbotson report that was previously cited, there is a description of how the returns were calculated. The index of returns is a market-value weighted measure, and the weight of each stock is its market capitalization.

3.1.1   Since the filing of the last revised model, C&W has indicated that the costs associated with planning activities (distribution network planning, mobile network planning, IP planning, etc..) are all incorporated as part of the expense factors, which were developed through Activity Based Costing analyses. Therefore, in the current model, there is a degree of overlap between the expense factors and the 2 percent planning assumption. To rectify this, please correct the model by zeroing out the duplicative planning assumptions.

C&W response

The appended model is adjusted for the duplicative planning assumptions.

3.2.1   Please provide a revised version of the fixed model, correcting any further numeric and formula errors that have been identified based on these and previous interrogatories and acknowledged by C&W in its responses. With it, please provide a list of all the changes made. For each change, please specify the round number and the interrogatory number for which the change was made.

C&W response

The following is a list of all the changes made to the appended model.

1) Round 1 - Interrogatory 3.4.1, fixed-model volumes were adjusted to be consistent with the volumes in Appendix VI of our response.

2) Round 1 - Interrogatory 3.5.4, the formulas for the Shared duct (2-bore through 12-bore) in cells: C30 - C78 were corrected and are now calculated using (Equipment Purchase Price + Installation Labour)*Planning Cost % of Capex.

3) Round 1 - Interrogatory 3.5.6, the formula (Equipment Purchase Price + Installation Labour)*Planning Cost % of Capex was applied to fiber optical cable joints Cell G:198.

4) Round 1 - Interrogatory 3.8.2., the 8 fiber optical (Aerial and Underground) cable now reflects its own investment cost and no longer is using the 12 fiber optical cable cost.

5) Round 1 - Interrogatory 3.13.1: all the superfluous references to 'notes' have been deleted from the workbooks.

6) Round 1 - Interrogatory 3.15.1: all bugs associated with the 'Go to' and 'Menu/Contents' buttons have been checked and corrected.

7) Round 1 - Interrogatory 3.15.2, the formulas that referenced the pivot table in range A6- A56 have been revised to read 'COUNTIF($A$7:$A$55,"<>0")'.

8) Round 1 - Interrogatories 3.15.4-12: All the errors mentioned in this section of the 1st round interrogatories are as a result of the pivot table referenced in range B6-L9 not being refreshed. The associated links (E17 - L28) to this pivot table were therefore also misaligned. In addition, cells N9 and O9 were also incorrect. All the errors associated with this pivot table have been corrected by refreshing the pivot table and all associated links to it.

9) Please note that, as expense factors are a function of bottom-up results, in addition to the changes in the bottom-up models described above, there are corresponding changes in the expense factor sheet.

10) Round 3 – Interrogatories 2.1.1:
Cell C215 on the TX Equipment Dimensions sheet changed to say: =MAX(SUMPRODUCT('Demand   Calculations'!K10:K43,'Demand Calculations'!U58:U91),SUMPRODUCT('Demand   Calculations'!L10:L43,'Demand Calculations'!U58:U91))
Cell C223 on the TX Equipment Dimensions sheet changed to say: =MAX(SUMPRODUCT('Demand   Calculations'!M10:M43,'Demand

Calculations'!C58:C91),SUMPRODUCT('Demand   Calculations'!N10:N43,'Demand Calculations'!C58:C91))

Cell C6 on the "Other Costs" sheet changed to say: ='Demand Calculations'!N101

Cell E165 of the Access Calculations sheet changed to say: ='Demand Calculations'!S101

Cell F9 on "Cost summary and mapping" sheet changed to say: =F12*SUM('NGN Costs'!F35,'NGN Costs'!F37

Frame relay retail and wholesale routing factors changed to 1 for 400-PSTN Host Switch - duration sensitive.

Cell V13 of the Routing factors sheet in the case of 900-DOMESTIC TRANSIT, the new routing factor is set to "2" to reflect the need for two interconnect links.

11) Round 3 – Interrogatories 2.1.2: Cell J11 of the Cost Summary & Mapping sheet had an ISFC assigned to "access", owing to a transposition error in the model. This has now been corrected, so that the ISFC costs are assigned to "core"

12) Round 3 – Interrogatories 2.1.11 part d: All redundant product listings removed from column A.

13) Round 3 - 2.1.2 part a: Cell L30 of the Cost Summary & Mapping sheet was categorised as "Access" ISFC, the model has been adjusted so that 400-Payphone Equipment carry a "core" ISFC.

14) Round 3 – Interrogatories 3.2.1: Cell C15 of the 'Technical Assumptions' sheet has been updated to reflect the 74% / 21% call-sensitive/duration Softswitch ratio.

Please note that we have *not* made any of the global amendments to asset prices to account for the fact that most of the prices are from 2003 (relevant to both Mobile and Fixed Models) and vendor discounts (relevant for the NGN equipment the Fixed Model). These issues have been raised by C&W or Telcordia in earlier interrogs, but C&W has not been directed to make any amendments.

3.2.1   Please demonstrate how the division of 74% call-set up driven and 26% call conveyance driven is reflected in the model.

C&W response

The model has been updated in the Technical Assumptions sheet, cell C15 to reflect the 74% / 21% call-sensitive/duration Softswitch ratio.

4.1.1   During sensitivity analysis of various inputs of the C&W models an apparent error was discovered in the mobile model that demonstrates that for changes to certain inputs the model cannot guarantee that the same set of output values will be produced for the same set of input values. A detailed description of the error that was found is as follows:

The technical assumption input "Available GSM 1900 spectrum" located on the "Technical Assumptions" worksheet of the mobile model workbook was changed from its original value of 15 to a unique different value and back again four different times. After each "test" of the variable, a test being: running the model with the variable set to the

original value; changing the variable to a new value and running; and returning the variable to its original value and running again, the mobile model workbook was deleted and a new copy was made from the revised version sent from C&W. In two of the four tests the outputs returned to their original values. Two of the four tests the outputs did not return to their original values. However, for each test the output results of the first run of the test always matched the output results of the third run of the last test. This was true even it the last test was one of the tests where the results of the third run did not match the results of the first run.

The sensitivity analysis of the model suggests that this problem exists for multiple input/assumption variables. Please resolve this issue so that model can reproduce the output results calculated in previous runs and sensitivity analysis and testing can be completed.

C&W response

This is a process problem as opposed to a problem with the operation of the models.

For any change to the BU model variables such that the investment costs are affected, one would need to update the expense factors in both the BU model and Consolidation file. The process used in testing the models did not include updating of the expense factors, resulting in an inconsistency of the results.

When running the models, please include the following steps:

- Open a new set of models including the expense factor file (see attached Appendix 2_Expense factors) (open fixed and mobile BU models, expense factor file, Consolidation file)

- Check that the expense factor sheet results are carried through to the ABS_VAL sheet.

- Record the mobile network results of the consolidation file. Also record the FAC results of the mobile BU model.

- Run the model through the Main sheet in the consolidation file

- Open the BU models (as they would have been closed)

- Record the results of the mobile network sheet of the consolidation file and also record the results of the FAC Output sheet in the mobile BU model (these results should be the same as the first run above)

- Select the mobile BU model and turn to the Technical Assumption sheet. Adjust the desired variable (in this case, the 1900 spectrum assumption)

- Select menu and click on the update FAC values.

- Select the expense factor sheet of the mobile BU model and update the expense factors. To update the exp factors: select cell E31 and type the following formula - "=VLOOKUP(A31,'[100306 Expense Factors and TD Categories_d17.xls]Expense Factor Adjusted'!$A:$D,4,FALSE)/D31"; copy this

22

formula down for all listed factors in col E; select the new list of factors, copy and value paste in the same location.

- Select menu and click on update FAC values

- Save the mobile BU model.

- Select the consolidation file and run the models. This must be done as the consolidation file must now reflect the new mobile BU model values (GRC, annualised cost and opex).

- Re-open all the BU model files.

- Select the expense factor sheet of the consolidation file

- In cell E55 type the following formula - "=VLOOKUP(A55,'[100306 Expense Factors and TD Categories_d17.xls]Expense Factor Adjusted'!$A:$D,4,FALSE)/D55", then copy this formula down the list for all factors. After copying the formula, select the new list in col E, copy and value paste in position. (this would have created the updated exp factors based on the new GRC, annualised cost and opex from the BU models)

- Save the consolidation file

- Select 'Main' and run the models again.

- The ensuing results should be the true and accurate values.

4.1.2   Please provide a revised version of the mobile model, correcting any further numeric and formula errors that have been identified based on these and previous interrogatories and acknowledged by C&W in its responses. With it, please provide a list of all the changes made. For each change, please specify the round number and the interrogatory question number for which the change was made.

C&W response

The following is a list of all the changes made to the appended model.

1) Round 3 – Interrogatories 2.1.1
        Cells C27:34 of the Demand Calculations sheet: Append *(1+$C$19) to each cell
        Cell C10 on "Radio Calculations" sheet changed to say: ='Demand Calculations'!C63

 2) Round 3 – Interrogatories 4.2.1: Cells D68 and E68 of the 'Cost Assumptions ' sheet have been changed to reflect the MSC division 21% call attempts and 79% call conveyance respectively.

Also changed cells D70 and F70 to reflect the HLR division of 80% call attempts and 20% subscriber respectively.

4.2.1   Please demonstrate how the division of 21% call-set up driven and 79% call conveyance driven is reflected in the model.

C&W response

The Cost Assumptions sheet, cells D68 and E68 have been updated to reflect the division 21% call attempts and 79% call conveyance respectively for the MSC network element.