



RUNE PROJECT CALL

REQUEST FOR FINAL OFFER for the supply and integration of active network layer systems

Questions and answers V1_19112019

November 2019

QUESTIONS N.1 – N.4

Based on received documentation we found qty misalignment between different files, as follows:

“RUNE_ACTIVE_RFFO_Appendix_11_AAN_List_07112019-1”

Slovenia: 42 locations, total 232.153 users connected

Croatia: 22 locations, total 111.107 users connected

(detailed list of locations and users connected for each OLT location)

“RUNE_ACTIVE_RFFO_Appendix_01_Agreed_minimum_technical_specifications_07112019-1”

Expected total end-user home connected number is 116.000 in Slovenia and 70.000,00 in Croatia (65:35 ratio), with possible home passed total end number 372.000

Q 1: Covered number of settlements is: *(we should understand that settlement is referring OLT site?)*

2.971 in Slovenia and

705 in Croatia

ANSWER

This has nothing to do with OLT sites (it impacts only the number of passive access nodes, which has no influence on active layer).

There should be:

At least 352 legacy GPON OLTs (AAN) with 8 GPON ports and number can rise up to 500 (a 16 port 1U device is acceptable)

At least 20 XGS-PON OLT with 4 GPON ports systems inside the network and number can rise up to 35

Q 2: Please clarify how many sites and how many users connected per site we have to consider for each country (Croatia and Slovenia).

Q 3: Please specify if provided number of subscribers are total (GPON+XGS) and if we have to do the split (90%-10%)

Q 4: Please specify the max split ratio we have to consider for dimensioning.

ANSWER

There is a list of all AANs (42SLO +22HR) and the relative number of potential households already attached to the call (*RUNE_ACTIVE_RFFO_Appendix_11_AAN_List_07112019-1*). Use that one for reference. The prospected number of home connected for the Croatian part is higher due to a high number of summer residences, but please count as requested the 50% of home passed

QUESTIONS N.5 – N.6

Should we understand that:

- We need to use inputs from the Appendix 11 but users mentioned there are home passed and we need to consider only 50% as homes connected?

ANSWER

Yes

- We can go with a split of 1/128 for GPON part?

ANSWER

No, 1:64 split ratio.

QUESTION N.7

In RUNE_ACTIVE_RFFO_Appendix_01 – page 14, is mentioned that “DWDM equipment must support 50 GHz standard ITU channel spacing”. On another paragraph it is requested a standard 40ch DWDM equipment utilizing at least 100 Gb capacity per wavelength with the possibility to provide 200Gbps and 400Gbps wavelengths in the future. Since 200Gbps and 400Gbps wavelengths may use different advanced modulation formats that may require signal bandwidths higher than 50GHz (example: 8QAM modulation format for 200Gbps wavelengths requires 62.5GHz signal bandwidth, Probabilistic Constellation Shaping - PCS may use also 75 GHz bandwidth signals) and moreover, the 40ch DWDM system may use 100GHz grid, please confirm that 50GHz grid requirement is not a mandatory one and vendors can offer 100GHz or even flex-grid spacing.

ANSWER

We agree and confirm, 50GHz grid requirement is not a mandatory one and vendors can offer 100GHz or even flex-grid spacing.

QUESTION N.8

In RUNE_ACTIVE_RFFO_Appendix_01 – page 15 is mentioned that “there will be a need to provide intermediate passive OADM in order to connect AAN location to AGGN location via DWDM infrastructure and not directly via private fiber link like all other AAN locations”. Please confirm that connection between AAN node and AGGN node mentioned above is using 10Gbps capacity signal. How many 10Gbps signal are required between the above mentioned AAN and AGGN nodes ?

ANSWER

Yes, 10G, 4 channels required.

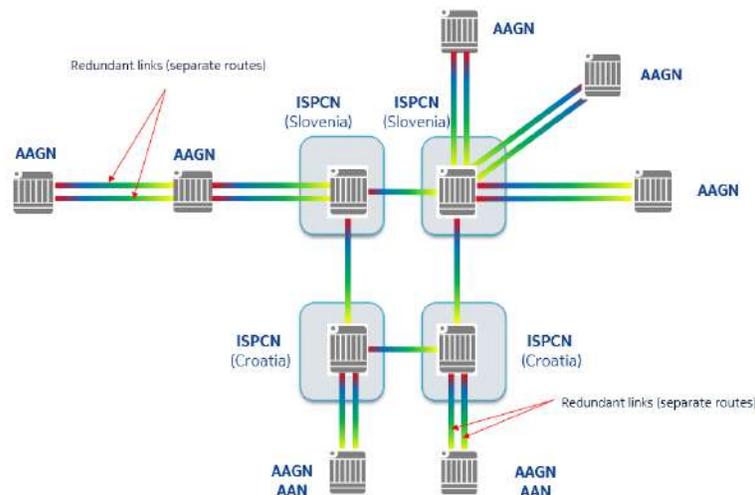
QUESTION N.9

In RUNE_ACTIVE_RFFO_Appendix_01 are written the following requirements:

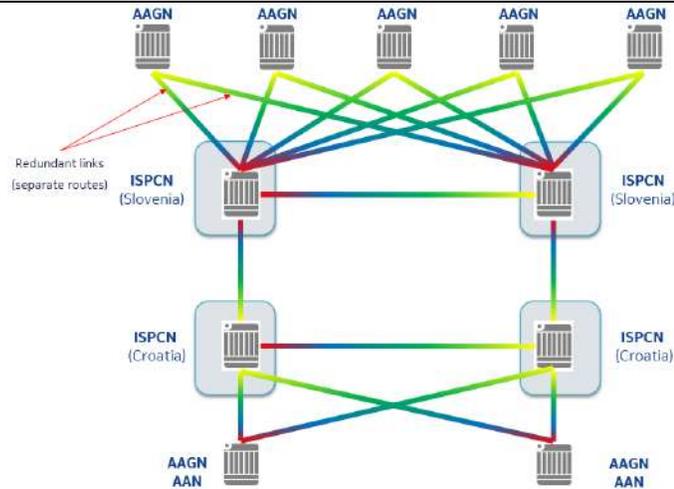
- a. in page 3 is mentioned: five AGGN nodes in Slovenia with multiple AGGN devices, which must have redundant connection to both ISPCN nodes in Slovenia.
- b. in page 7 chapter 1.2 is mentioned that “Connection between ISPCN and each AGGN node is done via two geographically independent fiber connections”.
- c. in page 10, chapter 1.5 it is mentioned that “Each AGGN device must be connected to all ISPCN locations in region”.

Since the fiber optic cable network topology is not clear, you are kindly asked to precise which of the following **physical connectivity** diagrams are required for the DWDM network:

Option1:



Option2:



ANSWER

Option 2.

QUESTION N.10

In RUNE_ACTIVE_RFFO_Appendix_01 – page 14 it is mentioned that “All connections must be redundant using at least two data paths between each two connected nodes (AGGN to ISPCN or ISPCN to ISPCN)”. Regarding the interconnections between ISPCN nodes in Slovenia, please precise if the main link is the direct(short) link between the two ISPCN nodes and the redundant link is the one passing through ISPCN nodes in Croatia or both optical links (main and redundant) are direct links between ISPCN nodes in Slovenia without passing any Croatian ISPCN node.

ANSWER

Connectivity between all ISPCN nodes is a RING topology, where Slovenian ISPCN nodes as well as Croatian ISPCN nodes are connected via up to 80km long single link to each other. Between ISPCN nodes in Slovenia and ISPCN nodes in Croatia the distance is up to 200km and each ISPCN to ISPCN connection is again just a single link. All four (4) links in this RING topology are in active-active mode.

QUESTION N.11

Can you please precise the distance between the two ISPCN locations in Slovenia ?

ANSWER

See previous answer. The second location is not yet identified, but it should be within Ljubljana area, or in worst case in Celje.

QUESTION N.12

Can you please precise the distance between the two ISPCN locations in Croatia?

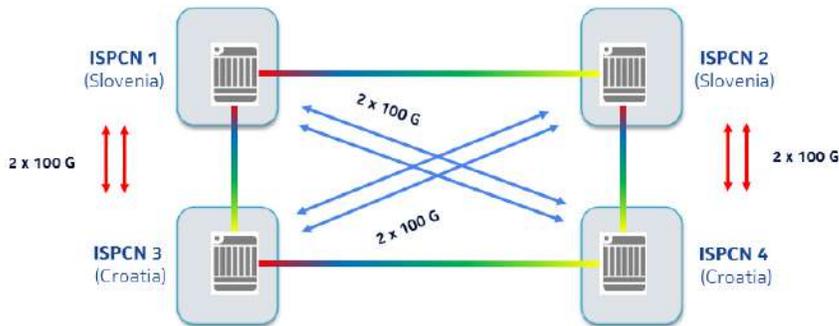
ANSWER

67 km, Matulji-Pazin.

QUESTION N.13

According to the RUNE_ACTIVE_RFFO_Appendix_01 – page 24, Network Topology, there are requested 2 DWDM connections that should transport 2x100 Gbps between ISPCN locations from Slovenia and ISPCN locations from Croatia: ISPCN1 (Slovenia) to ISPCN3 (Croatia) and ISPCN2 (Slovenia) to ISPCN4 (Croatia). Please, precise if there is

needed to transport 2x100 Gbps also between ISPCN1 (Slovenia) to ISPCN4 (Croatia) and ISPCN2 (Slovenia) to ISPCN3 (Croatia).



ANSWER

No, cross link not requested.

QUESTION N.14

How will the buyer react in case of incomplete offer from the bidder?

ANSWER

In case we receive an incomplete offer from the bidder we will examine the extent to which the offer is incomplete and we may follow one of the following paths:

- Declare invalid only the incomplete offer and evaluate all other complete offers;
- Call upon the bidder to provide the missing part of the offer;
- Or we may decide to declare the whole procurement procedure invalid and terminate the procedure without examining and/or choosing any of the other offers. In this case all the bidders will be asked to submit new offers in a new bidding procedure.

QUESTION N.15

Is it possible to offer only delivery of active devices (OLT, ONT devices), or only complete offers including designing, implementation, maintaining etc. will be allow and process? Basically, are partial offers acceptable or not?

ANSWER

Offers containing partial solutions will be treated as incomplete since they are not in line with the requests stated in the tender documentation.

In case we receive an incomplete offer we will examine the extent to which the offer is incomplete and we may follow one of the following paths:

- Declare invalid only the incomplete offer and evaluate all other complete offers;
- Call upon the bidder to provide the missing part of the offer;
- Or we may decide to declare the whole procurement procedure invalid and terminate the procedure without examining and/or choosing any of the other offers. In this case all the bidders will be asked to submit new offers in a new bidding procedure.

QUESTION N.16

Could you please confirm if the 4,8TB for the ISPCN is FD or HD?

ANSWER

Please explain the question a bit more.

QUESTION N.17

What is the max number of AGGN, which are planned for Croatia and Slovenia?

ANSWER

5 AGGN for Slovenia, 2 AGGN for Croatia.

QUESTION N.18

What is the expected switching fabric for the AGGN (ISCPN->4,8TB)?

ANSWER

No preference.

QUESTION N.19

Is it allowed to have overbooking on the AGGN?

ANSWER

It should be capable to scale to wirespeed, but some overbooking can be foreseen (in the delivered solution).