

**Aanbesteding** SURFnet8 Photonic Layer  
**Aanbestedende Dienst:** SURFnet B.V.  
**Referentie:**

**Omschrijving:**

SURFnet is searching for a Partner that can provide a solution for the SURFnet8 photonic layer. The aim of the Tender Procedure is to award a Contract to a Partner that can provide the requested hardware, software and support.

For the next generations of the SURFnet network, SURFnet requires a new photonic layer. This Tender aims to renew the bandwidth providing photonic layer, which is used for SURFnet's domestic services and potentially the Cross Border Fiber (CBF) systems.

The scope of the Contract for delivering the SURFnet8 photonic layer consists of;

1. Hardware, i.e. the physical equipment including installation related materials;
2. Software and licenses (including software interfaces (APIs)) for planning, performance monitoring, troubleshooting, fault detection, provisioning, security and accounting, automation, and programmability;
3. Layer 0 and layer 1 control plane functionality;
4. Training and periodic training sessions for current staff and staff to be hired in the future, and external personnel;
5. A migration scenario from our existing Ciena CPL and DWDM layer to a new solution. This may include field service support and the provision of temporary hardware;
6. High level design activities for migration, introduction of new features or equipment, and complex changes;
7. M&S (Maintenance and Support). SURFnet will stock its own spares;
8. Installation and de-installation procedures for equipment and software;
9. Delivery and setup of a test bed.

**Toelichting:**

Dear Madam/Sir,

Please find herewith the answers to the additional questions received so far, concerning the SURFnet8 Photonic Layer tender. Insofar this information notice contains modification and/or additions to the Request for Proposals Document and/or previous information notices (Nota van Inlichtingen), the text in this notice prevails. Please take note of this document in preparing your response.

Kind regards,

Jac Kloots  
SURFnet

**Nr:**

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**Categorie** Bestek/beschrijvend document**Betreft** MR72**Vraag**

Can you confirm by 'deploying' SURFnet means delivering the software to SURFnet and not performing the actual upgrade of software on the network or NMS system in the network?

**Antwoord****Vrijgegeven:** 03-08-2016

Yes, this is correct, SURFnet will install software using supplier-provided installation instructions and guidelines. M&S also applies to the software.

**Nr:****Categorie** Bestek/beschrijvend document**Betreft** AR33

26

**Vraag**

- a. Can Tenderer assume the CWDM filters are already deployed and thus only needs to supply the DWDM filters and 100Gs?
- b. Can Tenderer assume the 1551nm CWDM channel is deployed at both nodes A and B? In which case, can Tenderer also assume that the 100Gs at A and B is a single hop-to-hop that terminates at both POPs, like the 1551nm channel?

**Antwoord****Vrijgegeven:** 03-08-2016

- a. No. SURFnet reuses the CWDM infrastructure as much as possible for 10G waves. Only for 100G (and beyond) waves DWDM filters will be implemented. In case 10G waves are added in an access ring, CWDM filters are still needed.
- b. No. SURFnet's access rings may contain both hop-to-hop waves (i.e. CWDM transceivers at both end of each fibre span) as well as waves that bridge multiple fibre spans. (A fibre span is a fibre connection between two sites).

**Nr:****Categorie** Bestek/beschrijvend document**Betreft** AR33

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**Vraag**

Does Tenderer only need to supply the CWDM filters for both termination (8ch) at POPs and in-line deployment nodes (1ch) at A,B and C?

**Antwoord****Vrijgegeven:** 03-08-2016

Yes. Tenderer is to supply the CWDM filters at the PoPs and intermediate sites A, B, and C. Tenderer must take into account power budget limitations as indicated in AR33 for the 10G waves and for 100G transmission impairment limitations of Tender's 100G solution.

**Nr:****Categorie** Bestek/beschrijvend document**Betreft** AR33

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**Vraag**

For phase B SURFnet requests a quote for 40 times a 100G transponders whereas in the TCO file the multiplier is 10. SURFnet requests a quote for 5 first order Raman whereas in the TCO file the multiplier is 10. SURFnet requests a quote for 1 third order Raman whereas in the TCO file the multiplier is 10. Could you please clarify what needs to be quoted in the TCO?

**Antwoord****Vrijgegeven:** 03-08-2016

A mistake was made in the TCO model 'Annex\_DTTCO\_input\_form.xlsx'. A corrected version, 'Annex\_DTTCO\_input\_form\_v2.xlsx', has been uploaded with the correct multipliers.

**Nr:****Categorie** Bestek/beschrijvend document**Betreft** AR19

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**Vraag**

- a. Does SURFnet consider L0 as everything related to the optical layer (WSS, Amplifiers, Wavelengths) and L1 related to OTN?
- b. In addition, what do you mean with the price for this feature shall not exceed 10% of the license fee for the L0/L1 control plane? Tenderer is unsure about the difference between "feature" and "L0/L1" control plane.
- c. Last, do the L0/L1 control plane licenses need to be quoted in the TCO?

**Antwoord****Vrijgegeven:** 03-08-2016

- a. Yes, this is correct. In this tender OTN functionality is limited to transponders and muxponders.
- b. MR36 requires a L0/L1 control plane with basic features. AR19 contains added value features for which SURFnet awards points and for which SURFnet is prepared to pay an additional maximum of 10% of the license fee for the L0/L1 control plane with basic features (MR36).
- c. Yes, only the licenses for the MR36 control plane with basic features must be included in the TCO. AR19 states explicitly that this is not needed for the features mentioned in AR19.

**Nr:**

**Categorie** Bestek/beschrijvend document  
**Betreft** TCO  
**30**  
**Vraag**  
Could SURFnet confirm that spares for Phase A and all access rings need to be quoted in the TCO?  
**Antwoord** **Vrijgegeven: 03-08-2016**  
Yes, SURFnet confirms that spares for Phase A and all access rings must be quoted in the TCO.

**Nr:**

**Categorie** Bestek/beschrijvend document  
**Betreft** TCO  
**31**  
**Vraag**  
Could SURFnet confirm that all access rings need to be quoted in year 1 in the TCO?  
**Antwoord** **Vrijgegeven: 03-08-2016**  
Yes, SURFnet confirms that all access rings as described in the TCO model must be quoted in year 1 in the TCO.

**Nr:**

**Categorie** Bestek/beschrijvend document  
**Betreft** Migration  
**32**  
**Vraag**  
In the migration scenario, can Tenderer the 42 x 100G interfaces coming from services platforms (Interfaces type II) as already existing in the network and thus shall be included in the migration?  
**Antwoord** **Vrijgegeven: 03-08-2016**  
No, the 42 projected 100G DWDM waves originating from and terminating onto service platforms are not yet present and therefore do not need to be included in the migration plan to be submitted as part of this tender.

**Nr:**

**Categorie** Annex\_D\_TCO\_core\_model.xlsx  
**Betreft** Network dimensioning  
**33**  
**Vraag**  
What End-of-life traffic should be considered?  
**Antwoord** **Vrijgegeven: 03-08-2016**  
Tenderer may assume EOL to occur at a 40% allocation of the available optical spectrum. If Tenderer requires additional information, please specify what parameters are needed.

**Nr:**

**Categorie** Annex\_G\_MR\_AR\_input\_form.doc  
**Betreft** MR57 RAMAN amplification medium length  
**34**  
**Vraag**  
What if the solution doesn't require RAMAN amplification?

**Antwoord****Vrijgegeven:** 03-08-2016

Tenderer is encouraged to provide solutions without RAMAN amplification. However, when higher-order modulation formats require an improved OSNR, RAMAN amplification may not be avoidable. For this reason, Tenderer must provide a RAMAN solution.

**Nr:****Categorie** Annex\_G\_MR\_AR\_input\_form.doc**Betreft** MR26 Bi-directional transmission for time and frequency transfer

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**Vraag**

Are the paths of the bi-directional waves fixed, and can SURFnet communicate them?

**Antwoord****Vrijgegeven:** 03-08-2016

The paths of the bi-directional waves are not fixed. A first roll-out scenario envisages a limited number of nodes and will organically grow depending on the locations and needs of the customers and researchers.

**Nr:****Categorie** Annex\_G\_MR\_AR\_input\_form.doc**Betreft** MR26 Bi-directional transmission for time and frequency transfer

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**Vraag**

Are the frequencies of the bi-directional waves fixed, and can SURFnet communicate them?

**Antwoord****Vrijgegeven:** 03-08-2016

No, the frequencies of bi-directional waves are not fixed frequencies.

**Nr:****Categorie** Annex\_D\_TCO\_core\_model.xlsx**Betreft** Architecture

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**Vraag**

What redundancy/restoration capability is required? 1:1, 1:n, one fiber cut restoration, two fiber cut restoration, ...?

**Antwoord****Vrijgegeven:** 03-08-2016

SURFnet requires restoration to recover from at least one fibre cut as well as from different failures, such as power failures, when resulting in similar effects. This requirement is about restoration by setting up (if possible) a new optical link to restore as much bandwidth as possible.

(Optical protection switching by transmitting two optical signals carrying the same data routed through the network and an optical switch, which is triggered by a loss of power on the active link considers SURFnet spectrally in efficient and inadequate for protection of its managed services.)

**Nr:****Categorie** Annex\_D\_TCO\_core\_model.xlsx**Betreft** Architecture

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**Vraag**

Is Colorless/Directionless/Contentionless add/drop required in type A and type B nodes?

**Antwoord****Vrijgegeven:** 03-08-2016

Colourless and Directionless add/drop is required for type A and type B nodes. Tenderer is free to choose a technology, which is capable of achieving this functionality.