8. A method according to any one of the preceding claims wherein the step of measuring round trip delay of the first link comprises transmitting a test signal from the first node to the second node over the first link and receiving a reply to the test signal from the second node over the first link.

9. A method according to any one of the preceding claims wherein the step of measuring a round trip delay of the second link comprises transmitting a test signal to the second node over the second link and receiving a reply to the test signal from the second node over the second link.

10. A method according to any one of the preceding claims further comprising:

measuring a processing delay incurred at the second node between receiving the test signal and sending a reply to the test signal; and,

using the processing delay when determining a difference in the propagation delay of the first link with respect to the second link.

11. A method according to any one of the preceding claims further comprising measuring a delay incurred in a transmission path at the second node.

12. A method according to claim 11 wherein the step of measuring a delay incurred in a transmission path at the second node comprises measuring delay caused by at least one of: an optical amplifier, a dispersion compensation fibre.

13. A method according to any one of the preceding claims wherein the step of determining a difference in the propagation delay of the first link with respect to the second link determines a difference in the propagation delay of the first link with respect to the second link at a first wavelength and the method further comprises determining a difference in the propagation delay of the first link with respect to the second link at a second, different, wavelength, using the determined difference in the propagation delay at the first wavelength.

14. A method according to any one of the preceding claims wherein the step of determining a difference in the propagation delay of the first link with respect to the second link is performed at a plurality of different wavelengths and the method further

comprises determining a difference in the propagation delay of the first link with respect to the second link at a further wavelength, using the values of difference in propagation delay calculated at the plurality of wavelengths.

15. A method according to any one of the preceding claims wherein the first link comprises a first optical fibre and the second link comprises a second optical fibre.

16. Apparatus at a node of a communication network which is arranged to perform the method according to any one of the preceding claims.

17. Machine-readable instructions which, when executed by a processor, cause the processor to perform the method according to any one of claims 1 to 15.

CLAIMS

1. A method for measuring asymmetry in propagation delay of first and second links which connect a first node to a second node of a communication network comprising:

measuring a round trip delay of the first link;

measuring a round trip delay of the second link;

determining a difference in the propagation delay of the first link with respect to the second link using the measured round trip delays of the first link and the second link.

2. A method according to claim 1 wherein at least one of the measuring steps is performed at a wavelength that is normally used to carry traffic.

3. A method according to claim 1 or 2 wherein at least one of the measuring steps is performed at a wavelength, while the wavelength is carrying traffic.

4. A method according to claim 3 wherein the at least one of the measuring steps uses overhead data.

5. A method according to claim 1 or 2 wherein at least one of the measuring steps is performed at a dedicated wavelength.

6. A method according to claim 1 wherein at least one of the measuring steps is performed at a wavelength used to carry an Optical Supervisory Channel.

7. A method according to any one of the preceding claims further comprising compensating for at least one of:

different wavelengths used in measuring the round trip delay of the first link;

different wavelengths used in measuring the round trip delay of the second link;

a different wavelength used in measuring a round trip delay of the second link compared to a wavelength used in measuring a round trip delay of the first link.

CLAIMS

1. A method for measuring asymmetry in propagation delay of first and second links (51,52) which connect a first node (N1) to a second node (N2) of a communication network characterized by:

measuring (101) a round trip delay of the first link (51);

measuring (105) a round trip delay of the second link (52);

determining a forward propagation delay (d_f) of the first link (51) from the first node to the second node based on the measured round trip delay of the first link, and

determining a reverse propagation delay (d_r) of the second link (52) from the second node to the first node based on the measured round trip delay of the second link, and

determining (109) a difference between the propagation delay of the first link and the propagation delay of the second link.

2. A method according to claim 1 wherein at least one of the measuring steps (101,102) is performed at a wavelength that is normally used to carry traffic.

3. A method according to claim 1 or 2 wherein at least one of the measuring steps (101,102) is performed at a wavelength, while the wavelength is carrying traffic.

4. A method according to claim 3 wherein the at least one of the measuring steps (101,102) uses overhead data.

5. A method according to claim 1 or 2 wherein at least one of the measuring steps (101,102) is performed at a dedicated wavelength.

6. A method according to claim 1 wherein at least one of the measuring steps (101,102) is performed at a wavelength used to carry an Optical Supervisory Channel.

7. A method according to any one of the preceding claims further comprising compensating (104,108,110) for at least one of:

different wavelengths used in measuring the round trip delay of the first link (51);

different wavelengths used in measuring the round trip delay of the second link (52);

a different wavelength used in measuring a round trip delay of the second link compared to a wavelength used in measuring a round trip delay of the first link.

8. A method according to any one of the preceding claims wherein the step of measuring (101) round trip delay of the first link (51) comprises transmitting a test signal (31) from the first node (N1) to the second node (N2) over the first link and receiving a reply (32) to the test signal from the second node over the first link (51).

9. A method according to any one of the preceding claims wherein the step of measuring (105) a round trip delay of the second link comprises transmitting a test signal (33) to the second node (N2) over the second link (52) and receiving a reply (34) to the test signal from the second node over the second link (52).

10. A method according to any one of the preceding claims further comprising:

measuring a processing delay incurred at the second node (N2) between receiving the test signal (31) and sending a reply (32) to the test signal; and,

using the processing delay when determining a difference in the propagation delay of the first link with respect to the second link.

11. A method according to any one of the preceding claims further comprising measuring a delay incurred in a transmission path at the second node (N2).

12. A method according to claim 11 wherein the step of measuring a delay incurred in a transmission path at the second node (N2) comprises measuring delay caused by at least one of: an optical amplifier, a dispersion compensation fibre.

13. A method according to any one of the preceding claims wherein the step of determining a difference in the propagation delay of the first link (51) with respect to the second link (52) determines a difference in the propagation delay of the first link with respect to the second link at a first wavelength and the method further comprises determining a difference in the propagation delay of the first link with respect to the

second link at a second, different, wavelength, using the determined difference in the propagation delay at the first wavelength.

14. A method according to any one of the preceding claims wherein the step of determining a difference in the propagation delay of the first link (51) with respect to the second link (52) is performed at a plurality of different wavelengths and the method further comprises determining a difference in the propagation delay of the first link with respect to the second link at a further wavelength, using the values of difference in propagation delay calculated at the plurality of wavelengths.

15. A method according to any one of the preceding claims wherein the first link (51) comprises a first optical fibre and the second link (52) comprises a second optical fibre.

16. Apparatus at a node of a communication network which is arranged to perform the method according to any one of the preceding claims.

17. Machine-readable instructions which, when executed by a processor, cause the processor to perform the method according to any one of claims 1 to 15.