

NE40E Switch Fabric Units



Product Overview

The Switch Fabric Unit (SFU) responsible for switching data between interface boards is a key component of the NE40E Series Routers.

The NE40E Series Routers support several kinds of modular SFUs: SFUI-200-B, SFUI-200-C, SFUI-480-B, SFUI-480-C, SFUI-1T-B and SFUI-1T-C (Figure 1).

Figure 1. NE40E Series Switch Fabric Units



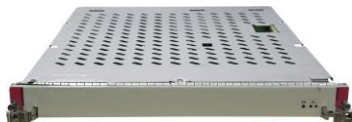
SFUI-2T-B



SFUI-200-B



SFUI-200-C



SFUI-480-B



SFUI-480-C



SFUI-1T-B



SFUI-1T-C

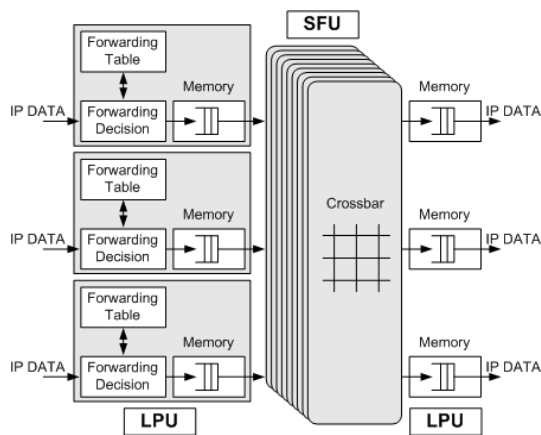
Product Features

The SFU responsible for switching data between interface boards is a key component of the NE40E. The NE40E uses switching chips developed by Huawei and Memory-Crossbar-Memory (M-C-M) to provide a three-level switching mode. Level-1 and level-3 switching use a shared-memory model and are performed on LPUs; level-2 switching uses a Crossbar model and is performed on SFUs. Figure 1 shows the SFU of the NE40E.

The level-1 switching chip on one LPU is fully connected to the level-2 switching chips on SFUs. The level-2 switching chips on the SFUs are also fully connected to the level-3 switching chip on another LPU. In addition, the level-2 crossbar switching chips work in load balancing mode on multiple switching planes. The entire SFU is unblocked. The following describes how data packets are transmitted across the SFU.

1. Data packets enter an LPU through physical interfaces and are fragmented into cells of a fixed length. These cells are then sent to the level-1 switching chips. After being buffered and scheduled, the cells enter the crossbar switching chips on the SFU. The level-1 switching chip on an LPU is fully connected to all of the level-2 switching chips. As a result, the same number of cells can be distributed to each level-2 switching plane. This implements load balancing on switching planes and facilitates fault tolerance.
2. After the cells reach the crossbar switching chips, the crossbar switching chips schedule the cells to the corresponding outbound interfaces according to the destination interfaces of the data packets. The cells are then sent to the level-3 switching chips on another LPU. At this point, the switching of the cells by the level-2 switching chips is completed.
3. After the cells reach the level-3 switching chips on another LPU, the system searches for the destination interfaces. Once found, the cells are reassembled and sent out through physical interfaces. At this point, switching of the data packets is completed.

Figure 2. Structure of NE40E Series Switch Fabric Units



Product Compatibility

Table 1. SFU Compatible Chassis ("●" indicates "support", and "-" indicates "not support")

BOM	Order Name	Description	NE40E-					
			X3	X8	X16	X3A	X8A	X16A
03055780	CR5DSFUI07B	480Gbps Switch Fabric Unit B(SFUI-480-B)	-	-	-	-	-	●
03056091	CR5DSFUI07B	1Tbps Switch Fabric Unit B(SFUI-1T-B)	-	-	-	-	-	●
03056095	CR5DSFUI07C	480Gbps Switch Fabric Unit C(SFUI-480-C)	-	-	-	-	●	-
03056094	CR5DSFUI07C	1Tbps Switch Fabric Unit C(SFUI-1T-C)	-	-	-	-	●	-
03053547	CR5DSFUIE07B	200Gbps Switch Fabric Unit B(SFUI-200-B)	-	-	●	-	-	-
03053548	CR5DSFUIE07C	200Gbps Switch Fabric Unit C(SFUI-200-C)	-	●	-	-	-	-
03057824	CR5DSFUI17B	480Gbps Switch Fabric Unit B(SFUI-480-B)	-	-	-	-	-	●
03057825	CR5DSFUI27B	2Tbps Switch Fabric Unit B(SFUI-2T-B)	-	-	-	-	-	●
03057823	CR5DSFUI17C	480Gbps Switch Fabric Unit C(SFUI-480-C)	-	-	-	-	●	-

Table 2. SFU Compatible MPUs ("●" indicates "support", and "-" indicates "not support")

BOM	Order Name	Description	SFUI-						
			200-B	200-C	480-B	480-C	1T-B	1T-C	2T-B
03057244	CR5DoMPUB571	Main Processing Unit B5(16G Memory)	●	-	●	-	●	-	●
03057257	CR5DoSRUA871	Switch and Route Processing Unit A8(16G Memory)	-	-	-	●	-	-	-
03057261	CR5DoSRUA971	Switch and Route Processing Unit A9(16G Memory)	-	-	-	-	-	●	-

BOM	Order Name	Description	SFUI-						
			200-B	200-C	480-B	480-C	1T-B	1T-C	2T-B
03057248	CR5DoMPUD471	Main Processing Unit D4(16G Memory)	-	-	-	-	-	-	-
03057054	CR5DoSRUB570	Switch and Route Processing Unit B5	-	●	-	-	-	-	-
03055705	CR5DoMPUD270	Main Processing Unit D3(Including 4G Memory and 2G USB)	-	-	-	-	-	-	-
03057822	CR5DoSRUA872	Switch and Route Processing Unit A8(16G Memory)	-	-	-	●	-	-	-
03057366	CR5DMPUX8670	Main Processing Unit B6	-	-	●		●		●

Product Specifications

Table 3. 480Gbps Switch Fabric Unit B(SFUI-480-B) Specifications

Item	Description
Order Name	CR5DSFUIM07B
Silkscreen	SFUI-480-B
Dimensions (H x W x D)	40.1 mm x 409.3 mm x 534.3 mm (1.58 in. x 16.11 in. x 21.04 in.)
Weight	9.5 kg (20.95 lb)
Typical power consumption	190.0 W
Typical heat dissipation	616.4 BTU/hour
Ambient temperature	Long terms: 0 °C to 45 °C (32°F to 113°F) Short terms: -5 °C to 55 °C (23°F to 131°F)
Reliability and availability	The 3+1 backup mode is used. The four SFUs balance services at the same time. If one SFU is faulty or replaced, the other three SFUs automatically take over its services to prevent service interruptions.

Table 4. 480Gbps Switch Fabric Unit B(SFUI-480-B) Specifications

Item	Description
Order Name	CR5DSFUIM17B

Item	Description
Silkscreen	SFUI-480-B
Dimensions (H x W x D)	40.1 mm x 409.3 mm x 534.3 mm (1.58 in. x 16.11 in. x 21.04 in.)
Weight	7.2 kg (15.88 lb)
Typical power consumption	130.0 W
Typical heat dissipation	421.8 BTU/hour
Ambient temperature	Long terms: 0 °C to 45 °C (32°F to 113°F) Short terms: -5 °C to 55 °C (23°F to 131°F)
Reliability and availability	The 3+1 backup mode is used. The four SFUs balance services at the same time. If one SFU is faulty or replaced, the other three SFUs automatically take over its services to prevent service interruptions.

Table 5. 1Tbps Switch Fabric Unit B(SFUI-1T-B) Specifications

Item	Description
Order Name	CR5DSFUIU07B
Silkscreen	SFUI-1T-B
Dimensions (H x W x D)	40.1 mm x 409.3 mm x 534.3 mm (1.58 in. x 16.11 in. x 21.04 in.)
Weight	9.5 kg (20.95 lb)
Typical power consumption	270.0 W
Typical heat dissipation	876.0 BTU/hour
Ambient temperature	Long terms: 0 °C to 45 °C (32°F to 113°F) Short terms: -5 °C to 55 °C (23°F to 131°F)
Reliability and availability	The 3+1 backup mode is used. The four SFUs balance services at the same time. If one SFU is faulty or replaced, the other three SFUs automatically take over its services to prevent service interruptions.

Table 6. 2Tbps Switch Fabric Unit B(SFUI-2T-B) Specifications

Item	Description
Order Name	CR5DSFUI27B
Silkscreen	SFUI-2T-B
Dimensions (H x W x D)	40.1 mm x 409.3 mm x 534.3 mm (1.58 in. x 16.11 in. x 21.04 in.)
Weight	8.8 kg (19.4 lb)
Typical power consumption	300.0 W

Item	Description
Typical heat dissipation	973.3 BTU/hour
Ambient temperature	Long terms: 0 °C to 45 °C (32°F to 113°F) Short terms: -5 °C to 55 °C (23°F to 131°F)
Reliability and availability	The 3+1 backup mode is used. The four SFUs balance services at the same time. If one SFU is faulty or replaced, the other three SFUs automatically take over its services to prevent service interruptions.

Table 7. 480Gbps Switch Fabric Unit C(SFUI-480-C) Specifications

Item	Description
Order Name	CR5DSFUIM07C
Silkscreen	SFUI-480-C
Dimensions (H x W x D)	24.9 mm x 386.8 mm x 534.3 mm (0.98 in. x 15.23 in. x 21.04 in.)
Weight	5 kg (11.02 lb)
Typical power consumption	120.0 W
Typical heat dissipation	389.3 BTU/hour
Ambient temperature	Long terms: 0 °C to 45 °C (32°F to 113°F) Short terms: -5 °C to 55 °C (23°F to 131°F)
Reliability and availability	The 3+1 backup mode is used. The four SFUs balance services at the same time (Two SFUs integrate on two MPUs). If one SFU is faulty or replaced, the other three SFUs automatically take over its services to prevent service interruptions.

Table 8. 480Gbps Switch Fabric Unit C(SFUI-480-C) Specifications

Item	Description
Order Name	CR5DSFUIM17C
Silkscreen	SFUI-480-C
Dimensions (H x W x D)	24.9 mm x 386.8 mm x 534.3 mm (0.98 in. x 15.23 in. x 21.04 in.)
Weight	3.8 kg (8.38 lb)
Typical power consumption	70.0 W
Typical heat dissipation	227.1 BTU/hour
Ambient temperature	Long terms: 0 °C to 45 °C (32°F to 113°F) Short terms: -5 °C to 55 °C (23°F to 131°F)
Reliability and availability	The 3+1 backup mode is used. The four SFUs balance services at the same time (Two SFUs integrate on two MPUs). If one SFU is faulty or replaced, the other three SFUs automatically take over its services to prevent service interruptions.

Table 9. 1Tbps Switch Fabric Unit C(SFUI-1T-C) Specifications

Item	Description
Order Name	CR5DSFUIU07C
Silkscreen	SFUI-1T-C
Dimensions (H x W x D)	24.9 mm x 386.8 mm x 534.3 mm (0.98 in. x 15.23 in. x 21.04 in.)
Weight	5 kg (11.02 lb)
Typical power consumption	160.0 W
Typical heat dissipation	519.1 BTU/hour
Ambient temperature	Long terms: 0 °C to 45 °C (32°F to 113°F) Short terms: -5 °C to 55 °C (23°F to 131°F)
Reliability and availability	The 3+1 backup mode is used. The four SFUs balance services at the same time (Two SFUs integrate on two MPUs). If one SFU is faulty or replaced, the other three SFUs automatically take over its services to prevent service interruptions.

Table 10. 200Gbps Switch Fabric Unit B(SFUI-200-B) Specifications

Item	Description
Order Name	CR5DSFUIE07B
Silkscreen	SFUI-200-B
Dimensions (H x W x D)	40.1 mm x 411 mm x 535.6 mm (1.58 in. x 16.18 in. x 21.09 in.)
Weight	4.3 kg (9.48 lb)
Typical power consumption	90.0 W
Typical heat dissipation	292.0 BTU/hour
Ambient temperature	Long terms: 0 °C to 45 °C (32°F to 113°F) Short terms: -5 °C to 55 °C (23°F to 131°F)
Reliability and availability	The 3+1 backup mode is used. The four SFUs balance services at the same time. If one SFU is faulty or replaced, the other three SFUs automatically take over its services to prevent service interruptions.

Table 11. 200Gbps Switch Fabric Unit C(SFUI-200-C) Specifications

Item	Description
Order Name	CR5DSFUIE07C
Silkscreen	SFUI-200-C

Item	Description
Dimensions (H x W x D)	35.1 mm x 399.2 mm x 535.6 mm (1.38 in. x 15.72 in. x 21.09 in.)
Weight	3.8 kg (8.38 lb)
Typical power consumption	77.0 W
Typical heat dissipation	249.8 BTU/hour
Ambient temperature	Long terms: 0 °C to 45 °C (32°F to 113°F) Short terms: -5 °C to 55 °C (23°F to 131°F)
Reliability and availability	The 2+1 backup mode is used. The three SFUs balance services at the same time (Two SFUs integrate on two MPUs). If one SFU is faulty or replaced, the other two SFUs automatically take over its services to prevent service interruptions.

For More Information

For more information about the Huawei NE40E Series Routers, visit <http://e.huawei.com> or contact us in the following ways:

- Global service hotline: <http://e.huawei.com/en/service-hotline>
- Logging into the Huawei Enterprise technical support web: <http://support.huawei.com/enterprise/>
- Sending an email to the customer service mailbox: support_e@huawei.com

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