

## Advantech AE Technical Share Document

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<b>Category</b>	■FAQ □ SOP	<b>Related OS</b>	N/A
<b>Abstract</b>	How to calculate backplane bandwidth & forwarding rate?		
<b>Keyword</b>	Backplane Bandwidth, Switch Fabric Capacity, Switch Fabric Speed, Forwarding Rate, Packets Capacity		
<b>Related Product</b>	All Switches.		

■ **Problem Description:**

1. What is the backplane bandwidth for EKI-7710E-2C?
2. What is the forwarding rate for EKI-7706E-2F?

■ **Answer:**

1. Switch **Backplane Bandwidth** is also called **Switch Fabric Capacity(Speed)**, which means the **maximum rate** of hardware exchange data under full duplex. You can check product specification on Advantech website (**Fig.1.**) or follow below formula to calculate it.

● ***How to calculate EKI-7710E-2C backplane bandwidth?***

EKI-7710E-2C ( 8FE and 2G SFP ):  $[(100M \times 8) + (1G \times 2)] \times 2 = 5.6Gbps$

Switch Properties	
MAC Table Size	8K
Packet Buffer Size	4.1M bit
Switch Fabric Speed	5.6Gbps
Jumbo Frame	9,216 bytes

**Fig.1. EKI-7710E-2C Backplane Bandwidth**

2. Switch **Forwarding Rate** is also called **Packets Capacity**, which means the **maximum amount** of a system can actually perform full duplex forwarding for frames or packets (PPS; packets per second) that related to frame size. **Fig.2.** is theoretical maximum frame

rates for different frame size.

- *How to calculate EKI-7708E-4F forwarding rate? (Take frame size 64 bytes for example)*

EKI-7706E-2F ( 4FE and 2G SFP ):

$$(148810 \text{ pps} \times 4 \text{ ports} \times 2) + (1488096 \text{ pps} \times 2 \text{ ports} \times 2) \approx 7.1\text{Mpps}$$

- *How to calculate EKI-9728G forwarding rate? (Take frame size 64 bytes for example)*

EKI-9728G-4X8CI ( 4×10G and 24×1G ):

$$(14880952 \text{ pps} \times 4 \text{ ports} \times 2) + (1488096 \text{ pps} \times 24 \text{ ports} \times 2) \approx 190\text{Mpps}$$

Speed	64	128	256	512	1024	1280	1518
10 Mbps	14881	8446	4529	2350	1198	962	813
100 Mbps	148810	84460	45290	23497	11973	9616	8128
1000 Mbps	1488096	844595	452899	234963	119732	96154	81275
10000 Mbps	14880952	8445946	4528986	2349625	1197318	961539	812744

**Fig.2. Theoretical Maximum Frame Rates for Different Frame Size (Bytes).**