

## Multiservice Router FX 5000, FX7000 and FX7200

### 1. INTRODUCTION

Traffic on the IP networks is showing steady increases year by year. Accordingly, telecommunications carriers face an urgent need for transferring to the next-generation IP networks to increase the capacity and speed of communications systems, as well as for implementing multi-services including VPN (Virtual Private Network), multicast and moving picture distribution. In addition, integration of the conventional communications services with the next-generation IP networks is also becoming an important issue. To realize the next-generation IP networks, a variety of new functions are required such as security measures, handling of VoIP (Voice over IP) and real-time distribution and guaranteeing of QoS (Quality of Service)<sup>1)</sup>.

The FX-series routers inherit and integrate the technologies of predecessor products such as the FITELnet-G series metro-edge routers and the FITELnet-F series routers compatible with security-assured networks, thereby supporting with high reliability the advanced networking functions for telecommunications carriers, including MPLS (Multi Protocol Label Switching)<sup>2)</sup> and IPsec (IP security)<sup>3)</sup>. Moreover, the FX7200 router is provided with the conventional ATM (Asynchronous Transfer Mode)<sup>4)</sup> interface, realizing a strong support for integrating the old and new communications services.

### 2. FEATURES

The FX-series presents numerous advantageous features as listed below, so that telecommunications carriers can operate their networks economically and efficiently, and it is possible to realize high-quality IP communications in the corporate network environments where advanced applications are used. The features are:

#### 1) Multiservice

To support substantial functions required for the next-generation IP networks such as IPv6, MPLS, IPsec, multicast and QoS.

#### 2) Hardware-based IPsec Encryption Engine

To support IPsec with 10GbE<sup>5)</sup> using a dedicated security processor. Supporting new protocols is also possible due to its programmable structure.



Figure 1 Appearance of FX5000.



Figure 2 Appearance of FX7000.



Figure 3 Appearance of FX7200.

**Table 1 Specifications of FX5000 and FX7000.**

Item		Specification
Type		Chassis-mounted
Interface		10GbE, GbE
Slot configuration	CPU	Half-size, 1 slot (FX5000) Half-size, 2 slots (FX7000)
	Ethernet line	Half-size, 3 slots (FX5000) Half-size, 5 slots (FX7000) Select from the below: 10GbE×2 GbE×16 (SFP-16) GbE×16 (SFP-8+RJ45-8) IPsec-compatible version is available, respectively
IPsec	Key exchange	IKEv1/v2
	Encryption	3DES, AES
	Hash	MD5, SHA-1
Routing function		RIP, OSPF, BGP4 (IPv4) RIPng, OSPFv3, BGP4+LDP, (IPv6) LDP-EX, MP-BGP, RSVP-TE, OSPF-TE (MPLS)
Multicast		IGMP, MLD
Maintenance & operation		SNMP, SYSLOG, ping, telnet, traceroute, SSH, FTP, RADIUS
Dimensions	FX5000	442(W)×600(D)×130(H) 19-in rack, 3U
	FX7000	442(W)×600(D)×262(H) 19-in rack, 3U
Fan		Backside exhaust

**Table 2 Specifications of FX7200.**

Item		Specification
Type		Chassis-mounted
Interface		OC-3 (ATM), 10 GbE, GbE
Slot configuration	CPU	Half-size, 2 slots
	Ethernet line	Half-size, 4 slots Select from the below: 10GbE×2 GbE×16 (SFP-16) GbE×16 (SFP-8+RJ45-8)
	ATM line	Half-size, 12 slots
Routing function		RIP, OSPF, BGP4 (IPv4) RIPng, OSPFv3, BGP4+LDP, (IPv6) LDP-EX, MP-BGP, RSVP-TE, OSPF-TE (MPLS)
Maintenance & operation		SNMP, SYSLOG, ping, telnet, traceroute, SSH, FTP, RADIUS
Dimensions		442 (W)×600 (D)×483 (H) 19-in rack, 11U
Fan		Backside exhaust

### 3) Large Capacity

Can accommodate up to 10 ports (in case of FX7000), to support high-speed, large-capacity networks.

### 4) High Reliability

Building a network of high reliability is possible by duplexing the CPU module (in case of FX7000 and FX7200) and the switch module, in addition to the power supply and the FAN module.

VRRP (Virtual Router Redundancy Protocol) <sup>6)</sup> is supported together with IPsec-HA <sup>7)</sup>, and equipment redundancy using IPsec is feasible.

### 5) Provided with the ATM interface (FX7200)

Based on the ATM interface provided with, integration of next-generation IP networks with conventional communications networks is supported.

## 3. CONCLUSION

The FX series is a product group targeted at telecommunications carriers and corporate networks. Although these markets are dominated by overseas manufacturers, we as a domestic manufacturer intend to offer a variety of products that fully satisfy customers' needs, thereby expanding our performance in the network business centered on routers.

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### Glossary

- 1) QoS: QoS refers to quality of service provision such as the bandwidth in use, priority of data transport and delay.
- 2) MPLS: MPLS is one of the methods to build a VPN, in which an identifier [label] is attached to packets to realize fast transports.
- 3) IPsec: IPsec is a method to realize a VPN, in which falsification and/or eavesdropping of transport data (packet) over the channels is prevented by encryption, tunneling and decryption, thus achieving security assurance.
- 4) ATM: ATM is a highly flexible communication method based on packet, in which a fixed-length data unit called [cell] having 53 bytes, consisting of 48 bytes of information and 5 bytes of control, is used for transport.
- 5) 10GbE: 10GbE is an Ethernet standard for 10-Gbps data rate.
- 6) VRRP: VRRP is an equipment redundancy technology, in which two or more routers are configured to stand for a virtual router, and if one of the routers that is actually routing the data fails it is automatically replaced by another router.
- 7) IPsec-HA: IPsec-HA is a technology used in a redundant equipment configuration for VRRP and the like, where the control information for IPsec is shared among the equipment to improve the continuity of IPsec connections even when the equipment fail.