H3C S6520X-SI Series 10GE Layer 3 Runrate Switch

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Product Overview

H3C S6520X-SI Series Switch—High performance and scalable 10GE access switching solution with fixed power or dual pluggable power, IRF feature for resiliency. The series offers OSPF/BGP and multicast, SDN enabled and flexible management.

The S6520X-SI series switch for SMB market contains the following 4 models:

- S6520X-16ST–SI: 16×1/10G SFP+ ports (2 Combo 1G/2.5G/5G/10G Base-T Multi-giga ports), 2 × power module slots

- S6520X-24ST–SI: 24 × 1/10G SFP+ ports, (2 Combo 1G/2.5G/5G/10G Base-T Multi-giga ports), 2 × power module slots

- S6520X-10XT-SI: 8×1G/2.5G/5G/10GBase-T Ports, 2×1G/10GBase-X SFP Plus Ports

- S6520X-16XT-SI: 14×1G/2.5G/5G/10GBase-T Ports, 2×1G/10GBase-X SFP Plus Ports

S6520X-16ST-SI

S6520X-24ST-SI

S6520X-10XT-SI

S6520X-16XT-SI

Features and Benefits

10GE and Multi-Giga Forwarding

The switch offers all 10GE ports and working at wire-speed. It provides 10, 16, or 24 Ten Gigabit ports, each model offers both 10/1GE autosensing SFP+ ports and 1G/2.5G/5G/10G Base-T Multi-giga ports.

H3C Intelligent Resilient Framework 2 (IRF2)

H3C Intelligent Resilient Framework 2 (IRF 2) virtualizes multiple S6520X-SI switches into one virtual switch and provides the following benefits:

- **Scalability:** IRF 2 allows you to add devices to the IRF 2 system easily. It provides a single point of management, enables switch plug-and-play, and supports software auto-update for software synchronization from the master to the new member devices. It brings business agility with lower total cost of ownership by allowing new switches to be added to the fabric without network topology change as business grows.

- **High availability:** The H3C proprietary routing hot backup technology ensures redundancy and backup of all information on the control and data planes and non-stop Layer 3 data forwarding in an IRF 2 fabric. It also eliminates single point of failure and ensures service continuity.

- **Redundancy and load balancing:** The distributed link aggregation technology supports load sharing and mutual backup among multiple uplinks, which enhances the network redundancy and improves link resources usage.

- **Flexibility and resiliency:** The switch use standard 10GE ports instead of specialized ports for IRF links between IRF member devices. This allows customers to assign bandwidth as needed between uplink, downlink, and IRF system connections.

Wide Range of Advanced Features

The switch offers a wide range of features, including:

- **Modular software design:** The switch uses modular design for software, which enables feature installation and removal on an as-needed basis. Refined physical architecture and optimized software workflows greatly reduce the end-to-end packet processing delay.

- **Software-defined networking (SDN):** An innovative network architecture that separates the control plane from the forwarding plane, typically by using OpenFlow. SDN significantly simplifies network management, reduces maintenance complexities and costs, enables flexible traffic management, and offers a good platform for network and application innovations.

- **Virtual eXtensible LAN (VXLAN):** A MAC-in-UDP technology that provides Layer 2 connectivity between distant network sites across an IP network. VXLAN enables long-distance virtual machine and data mobility and is typically used in data centers and the access layer of campus networks for multitenant services. The H3C implementation of VXLAN supports automatic VXLAN tunnel establishment with EVPN.

- **Ethernet Virtual Private Network (EVPN):** A Layer 2 VPN technology that provides both Layer 2 and Layer 3 connectivity between distant network sites across an IP network. EVPN uses MP-BGP in the control plane and VXLAN in the data plane. EVPN provides the following benefits: Configuration automation; Separation of the control plane and the data plane; Integrated routing and bridging (IRB).

- **In-Service Software Upgrade (ISSU) and Operation, Administration, and Maintenance (OAM):** Ensure business continuity and improve Ethernet management and maintainability.

Comprehensive Security Control Policies

The switch supports AAA authentications (including RADIUS authentication) and dynamic or static binding of user identifiers such as user account, IP address, MAC address, VLAN, and port number.

Using the switch in conjunction with H3C IMC, you can manage and monitor online users in real time and take prompt action on illegitimate behaviors.

The User Profile allows to define a set of policies based on user group in different application scenario.

The switch offers a large number of inbound and outbound ACLs and VLAN-based ACL assignment. This simplifies configurations and saves ACL resources.

MACsec

MACsec is an ideal hop-by-hop link-layer security protocol for Ethernet networks, which are typically insecure. It provides the following services:

- **Data encryption:** Encrypts data over the Ethernet link to protect data against security issues such as eavesdropping.

- **Anti-replay:** Prevents packets from being intercepted and modified en route to protect the network against unauthorized access.

- **Tampering protection:** prevents packet tampering to protect data integrity.

MACsec supports the following deployments:

- **Client-oriented:** Protects data transmission over the link between the client and its access device.

- **Device-oriented mode:** Protects data transmission over the link between two peering devices.

The switch can cooperate with H3C iNode client and core switches to provide a complete MACsec solution.

High Availability

In addition to node and link protection, the switch offers the following hardware high availability features:

- S6520X-16ST-SI and S6520X-24ST-SI offer 1+1 power module redundancy.

- Automatic power and fan tray status monitoring and alarming mechanisms.

- Automatic fan speed adjustment based on the change in temperature.

- Self-protection mechanisms that protect power modules against overcurrent, overvoltage, and overtemperature conditions.

Outstanding Management Capacity

The switch provides a variety of management features and is easy to manage. It offers the following device management features:

- Provides multiple management interfaces, including the console port, out-of-band management Ethernet port, and USB port.

- Supports configuration and management from CLI or H3C IMC Intelligent Management Center.

- Supports multiple access methods, including SNMPv1/v2c/v3, Telnet, and more secure SSH 2.0 and SSL.

- Uses OAM to enhance system management capability.

- Supports FTP for system upgrade.

Smart Management Center (SmartMC)

SmartMC is H3C's latest offering and innovation that helps small and middle size enterprise network to address management issue and is free of charge, easy to use web management tool. SmartMC is embedded network management tool into the switch, it includes commander switches and other access switches.

SmartMC delivers the following benefits:

- **Intelligent operation:** once the switch is powered on and SmartMC function is enabled, topology will be created automatically and user can go enhanced web GUI to check the latest status.

- **Centralized management:** all management can be achieved via commander switch such as centralized configuration backup, and software version management, increasing working efficiency.

- **One key device replacement:** in case of one switch failure, the new added same type switch can download the same configuration and work as old switch immediately

Multi-chassis Link Aggregation Group (M-LAG)

H3C S6520X-SI series switches support M-LAG, which enables links of multiple switches to aggregate into one to implement device-level link backup. M-LAG is applicable to servers dual-homed to a pair of access devices for node redundancy.

- **Streamlined topology:** M-LAG simplifies the network topology and spanning tree configuration by virtualizing two physical devices into one logical device.

- **Independent upgrading:** The DR member devices can be upgraded independently one by one to minimize the impact on traffic forwarding.

- **High availability:** The DR system uses a keepalive link to detect multi-active collision to ensure that only one member device forwards traffic after a DR system splits.

Hardware Specifications

Item	S6520X-16ST-SI	S6520X-24ST-SI	S6520X-10XT-SI	S6520X-16XT-SI
Port switching capacity	320Gbps	480Gbps	200Gbps	320Gbps

Item	S6520X-16ST-SI	S6520X-24ST-SI	S6520X-10XT-SI	S6520X-16XT-SI
Packet forwarding rate	240Mpps	357Mpps	240Mpps	240Mpps
Box switching capacity	1.44Tbps			
CPU	Dual-Core, 1.6GHz			
Flash/SDRAM	1GB/2GB			
Buffer	3M			
Dimensions (W×D×H)	440×360× 43.6 mm	440×360× 43.6 mm	440×260× 43.6mm	440×260×43.6 mm
Weight	≤3.9kg	≤4.0kg	≤3.4kg	≤3.4kg
Service ports	16×1/10G SFP+ ports (2 Combo 1G/2.5G/5G/10G Base-T Multi-giga ports)	24×1/10G SFP+ ports (2 Combo 1G/2.5G/5G/10G Base-T Multi-giga ports)	8×1G/2.5G/5G/10G Base-T Multi-giga ports + 2×1/10G SFP Plus	14× 1G/2.5G/5G/10G Base-T Multi-giga ports+ 2×1/10G SFP Plus
Console ports	1	1	1	1
Management Ethernet ports	1	1	1	1
USB ports	1	1	1	1
Expansion slots	N/A			
Power Supply slots	2	2	N/A	N/A
Idle power consumption	AC: 26W DC: 21W	AC: 26W DC: 25W	AC: 17.5W	AC: 22.1W
Max. power consumption	AC: 57W DC: 58W	AC: 70W DC: 72W	AC: 34.5W	AC: 48.3W
Input voltage range	AC Rated: 100 VAC to 240 VAC @ 50 Hz/60 Hz DC: -48V~-60V			
Operating temperature	0ºC to 45ºC (32°F to 113°F) -60m-5000m altitude: From 0m, the maximum operating temperature reduce by 0.33℃ for every time 100 the altitude increases by 100m.			

Item	S6520X-16ST-SI	S6520X-24ST-SI	S6520X-10XT-SI	S6520X-16XT-SI
Storage temperature	-40℃ to 70℃(-40℉ to 158℉)			
Operating & storage humidity	5% RH to 95% RH, non-condensing			
MTBF(Year)	60.3	89.5	58.1	58.1
MTTR(Hour)	1	1	1	1

Software specifications

Item	S6520X-SI switch series
Virtualization	Intelligent Resilient Framework 2 (IRF2) Distributed device management Distributed link aggregation Distributed resilient routing Stacking through standard Ethernet ports Local device stacking and remote device stacking LACP-, BFD-, and ARP-based multi-active detection (MAD)
Jumbo frame	Supported
MAC address table	Static MAC address Blackhole MAC address MAC learning limit
OpenFlow	OpenFlow 1.3
VxLAN	VXLAN L2 switching VXLAN L3 routing VXLAN VTEP IS-IS+ENDP distributed control plane MP-BGP+EVPN distributed control plane OpenFlow+Netconf centralized control plane
VLAN	Port-based VLAN (up to 4094 VLANs) Default VLAN Private VLAN QinQ and flexible QinQ VLAN mapping PVST+ and RPVST+

Item	S6520X-SI switch series
Traffic monitoring	sFLOW
DHCP/DHCPv6	DHCP/DHCPv6 client DHCP/DHCPv6 snooping DHCP/DHCPv6 relay DHCP/DHCPv6 server DHCP snooping Option 82/DHCP relay Option 82
ARP	Static entry Gratuitous ARP Common proxy ARP and local proxy ARP Dynamic ARP inspection ARP anti-attack ARP flood suppression ARP source suppression ARP detection based on DHCP snooping safety entries, 802.1X entries, and IP/MAC static binding entries
Routing	IPv4/IPv6 static routing Dynamic routing such as RIP v1/2 and RIPng Policy routing Equal-cost multi-path routing (ECMP) VRRP OSPFv1/v2/v3 BGP IS-IS
IPv6	Neighbor Discovery (ND) PMTU ICMP v6, Telnet v6, SFTP v6, SNMP v6, BFD v6, VRRP v3 SSH2 v6 IPv6 Portal IPv6 tunnel
Multicast	IGMP v2/v3 IGMP Snooping v2/v3 IGMP Snooping fast-leave IGMP Snooping group-policy PIM-SM , PIM-SSM , PIM-DM

Item	S6520X-SI switch series
	PIM snooping
	MVRP (GVRP analog)
	MFF
	Enhanced Layer 3 multicast
MPLS	Support MPLS
	Support MCE
	Support MPLS VPN, VPLS
Zero Configuration	DHCP auto-config
	CWMP-TR069
Broadcast/Multicast /Unicast storm suppression	Storm suppression based on port bandwidth percentage
	Storm suppression based on PPS
	Storm suppression based on BPS
	Broadcast traffic/Multicast traffic/Unknown unicast traffic suppression
Loop-free redundant Layer 2 topology	STP/RSTP/MSTP/ PVST/PVST+
	STP Root Guard
	BPDU Guard
	BPDU Drop
	BPDU Blocking and Root Guard
	Link Detection (UDLD)
	Digital Diagnostic Monitor (DDM)
	G.8032 Ethernet ring protection switching (ERPS)
QoS/ACL	Rate limit for receiving and transmitting packets
	CAR
	COS, TOS
	Eight output queues per port
	Flexible queue scheduling algorithms based on both port and queue, including SP, WDRR, WRR, WFQ, and SP+WRR
	802.1p priority and DSCP priority
	Layer 2 to Layer 4 packet filtering
	Traffic classification based on source MAC, destination MAC, source IP, destination IP, port, TCP / UDP Port, protocol, and VLAN
	Time range
Mirroring	Flow mirroring
	N:4 port mirroring

Item	S6520X-SI switch series
	Local port mirroring and remote port mirroring
	Policy-based Mirroring
	Traffic Mirroring
Security	Hierarchical user management and password protection
	MAC-based authentication
	802.1X
	Storm constrain
	AAA authentication
	RADIUS authentication
	HWTACACS
	SSH2.0
	Port isolation
	IP/Port/MAC binding
	IP source guard
	HTTPs
	SSL
	User Profile
	Public Key Infrastructure (PKI)
	CPU protection
	Control Plane Protection (CoPP), Wireless Intrusion Prevention System (WIPS)
	ND Detection, RA Guard
Loading and upgrading	Loading and upgrading through XMODEM/FTP/TFTP
	Loading and upgrading from USB
Management and maintenance	Configuration from CLI
	Login through Telnet, and the console port
	Job scheduler
	ISSU
	VCT
	802.1ag and 802.3ah
	Simple Network Management Protocol (SNMP)
	IMC network management system
	System log
	Alarming based on severity
	NTP

Item	S6520X-SI switch series
	Power, fan, and temperature alarming
	Debugging information output
	Ping and Tracert
	RMON
	LLDP, LLDP-MED
	LACP
	Track
	Telnet-based remote maintenance
EMC	FCC Part 15 Subpart B CLASS A
	ICES-003 CLASS A
	VCCI CLASS A
	CISPR 32 CLASS A
	EN 55032 CLASS A
	AS/NZS CISPR32 CLASS A
	CISPR 24
	EN 55024
	EN 61000-3-2
	EN 61000-3-3
	GB/T 9254
	YD/T 993
Safety	UL 60950-1
	CAN/CSA C22.2 No 60950-1
	IEC 60950-1
	EN 60950-1
	AS/NZS 60950-1
	FDA 21 CFR Subchapter J
	GB 4943.1

Performance Specification

Model	S6520X-16ST-SI	S6520X-24ST-SI	S6520X-10XT-SI	S6520X-16XT-SI
MAC address entries(max)	32,768	32,768	32,768	32,768
VLAN table	4,094	4,094	4,094	4,094
VLAN interface	1,024	1,024	1,024	1,024

IPv4 routing entries(max)	16,384	16,384	16,384	16,384
IPv4 ARP entries(max)	16,384	16,384	16,384	16,384
IPv4 ACL entries	Ingress: 1024 Egress: 256	Ingress: 1024 Egress: 256	Ingress: 1024 Egress: 256	Ingress: 1024 Egress: 256
IPv4 multicast L2 entries	4,000	4,000	4,000	4,000
IPv4 multicast L3 entries	1,500	1,500	1,500	1,500
IPv6 unicast routing entries(max)	8,192	8,192	8,192	8,192
QOS forward queues	8	8	8	8
IPv6 ACL entries	Ingress: 1024 Egress: 256	Ingress: 1024 Egress: 256	Ingress: 1024 Egress: 256	Ingress: 1024 Egress: 256
IPv6 ND entries(max)	10,240	10,240	10,240	10,240
IPv6 multicast L2 entries	2,000	2,000	2,000	2,000
IPv6 multicast L3 entries	500	500	500	500
Jumbo frame length	10,000	10,000	10,000	10,000
Max Stacking Member	9	9	9	9
Max Stacking Bandwidth	160Gbps	160Gbps	160Gbps	160Gbps
MAX num in one link group	32	32	32	32
Link group num	128	128	128	128

Removable Components Matrix

Field Replace Unit	S6520X-16ST-SI/S6520X-24ST-SI
Removable power supplies	
PSR75-12A	Supported

Standards and Protocols Compliance

Organization	Standards and Protocols
IEEE	802.1x Port based network access control protocol
	802.1ab Link Layer Discovery Protocol
	802.1ak MVRP and MRP
	802.1ax Link Aggregation
	802.1d Media Access Control Bridges

Organization	Standards and Protocols
	802.1p Priority
	802.1q VLANs
	802.1s Multiple Spanning Trees
	802.1ag Connectivity Fault Management
	802.1v VLAN classification by Protocol and Port
	802.1w Rapid Reconfiguration of Spanning Tree
	802.3ad Link Aggregation Control Protocol
	802.3ah Ethernet in the First Mile
	802.3x Full Duplex and flow control
	802.3af Power over Ethernet
	802.3at Power over Ethernet
	802.3bt Power over Ethernet
	802.3az Energy Efficient Ethernet
	802.3u 100BASE-T
	802.3ab 1000BASE-T
	802.3z 1000BASE-X
	802.3ae 10-Gigabit Ethernet
	802.3by 25 Gbps
	802.3ba 40/100G Ethernet
IETF	RFC 1213 MIB-2 Stands for Management Information Base
	RFC 2711 IPv6 Router Alert Option
	RFC 2787 Definitions of Managed Objects for the Virtual Router Redundancy Protocol
	RFC 2918 Route Refresh Capability for BGP-4
	RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations
	RFC 2934 Protocol Independent Multicast MIB for IPv4
	RFC 3101 OSPF Not-so-stubby-area option
	RFC 3019 MLDv1 MIB
	RFC 3046 DHCP Relay Agent Information Option
	RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
	RFC 3065 Autonomous System Confederation for BGP

Organization	Standards and Protocols
	RFC 3137 OSPF Stub Router Advertisement sFlow
	RFC 3376 IGMPv3
	RFC 3416 (SNMP Protocol Operations v2)
	RFC 3417 (SNMP Transport Mappings)
	RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)
	RFC 3484 Default Address Selection for IPv6
	RFC 3509 Alternative Implementations of OSPF Area Border Routers
	RFC 3580 IEEE 802.1X Remote Authentication Dial In User Service (RADIUS) Usage Guidelines
	RFC 3623 Graceful OSPF Restart
	RFC 3768 Virtual Router Redundancy Protocol (VRRP)
	RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
	RFC 3973 PIM Dense Mode
	RFC 4022 MIB for TCP
	RFC 4113 MIB for UDP
	RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
	RFC 4251 The Secure Shell (SSH) Protocol
	RFC 4252 SSHv6 Authentication
	RFC 4253 SSHv6 Transport Layer
	RFC 4254 SSHv6 Connection
	RFC 4271 A Border Gateway Protocol 4 (BGP-4)
	RFC 4273 Definitions of Managed Objects for BGP-4
	RFC 4291 IP Version 6 Addressing Architecture
	RFC 4292 IP Forwarding Table MIB
	RFC 4293 Management Information Base for the Internet Protocol (IP)
	RFC 4360 BGP Extended Communities Attribute
	RFC 4419 Key Exchange for SSH
	RFC 4443 ICMPv6
	RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)
	RFC 4486 Subcodes for BGP Cease Notification Message

Organization	Standards and Protocols
	RFC 4541 IGMP & MLD Snooping Switch
	RFC 4552 Authentication/Confidentiality for OSPFv3
	RFC 4601 PIM Sparse Mode
	RFC 4607 Source-Specific Multicast for IP
	RFC 4724 Graceful Restart Mechanism for BGP
	RFC 4750 OSPFv2 MIB partial support no SetMIB
	RFC 4760 Multiprotocol Extensions for BGP-4
	RFC 4861 IPv6 Neighbor Discovery
	RFC 4862 IPv6 Stateless Address Auto-configuration
	RFC 4940 IANA Considerations for OSPF
	RFC 5059 Bootstrap Router (BSR) Mechanism for PIM, PIM WG
	RFC 5065 Autonomous System Confederation for BGP
	RFC 5095 Deprecation of Type 0 Routing Headers in IPv6
	RFC 5187 OSPFv3 Graceful Restart
	RFC 5340 OSPFv3 for IPv6
	RFC 5424 Syslog Protocol
	RFC 5492 Capabilities Advertisement with BGP-4
	RFC 5519 Multicast Group Membership Discovery MIB (MLDv2 only)
	RFC 5798 VRRP (exclude Accept Mode and sub-sec timer)
	RFC 5880 Bidirectional Forwarding Detection
	RFC 5905 Network Time Protocol Version 4: Protocol and Algorithms Specification
	RFC 6620 FCFS SAVI
	RFC 6987 OSPF Stub Router Advertisement
	RFC6020 YANG - A Data Modeling Language for the Network Configuration Protocol (NETCONF)
	RFC7348 Virtual eXtensible Local Area Network (VXLAN): A Framework for Overlaying Virtualized Layer 2 Networks over Layer 3 Networks
	RFC7432 BGP MPLS-Based Ethernet VPN
	RFC4664 Framework for Layer 2 Virtual Private Networks (L2VPNs)
	RFC4665 Service Requirements for Layer 2 Provider Provisioned Virtual Private Networks

Organization	Standards and Protocols
	RFC4761 Virtual Private LAN Service (VPLS) Using BGP for Auto-Discovery and Signaling
	RFC4762 Virtual Private LAN Service (VPLS) Using Label Distribution Protocol (LDP) Signaling
	RFC5120 M-ISIS: Multi Topology (MT) Routing in Intermediate System to Intermediate Systems (IS-ISs)
	RFC5280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile
	RFC5308 Routing IPv6 with IS-IS
	RFC5381 Experience of Implementing NETCONF over SOAP
	RFC5415 Control and Provisioning of Wireless Access Points (CAPWAP) Protocol Specification
ITU	ITU-T Y.1731
	ITU-T Rec G.8032/Y.1344 Mar. 2010

Ordering Information

Product ID	Product Description
LS-6520X-10XT-SI	H3C S6520X-10XT-SI L3 Ethernet Switch with 8*1G/2.5G/5G/10GBase-T Ports and 2*1G/10GBase-X SFP Plus Ports,(AC)
LS-6520X-16XT-SI	H3C S6520X-16XT-SI L3 Ethernet Switch with 14*1G/2.5G/5G/10GBase-T Ports and 2*1G/10GBase-X SFP Plus Ports,(AC)
LS-6520X-16ST-SI-GL	H3C S6520X-16ST-SI L3 Ethernet Switch with 16*1G/10G BASE-X SFP Plus Ports(2XG Combo),Without Power Supplies
LS-6520X-24ST-SI-GL	H3C S6520X-24ST-SI L3 Ethernet Switch with 24*1G/10G BASE-X SFP Plus Ports(2XG Combo),Without Power Supplies
Power supply	
PSR75-12A-GL	75W AC Pluggable Power Module
Wireless license	
LIS-WX-1-BE	H3C SME-OVS Access Controller 1-AP License
LIS-WX-4-BE	H3C SME-OVS Access Controller 4-AP License
LIS-WX-8-BE	H3C SME-OVS Access Controller 8-AP License
LIS-WX-16-BE	H3C SME-OVS Access Controller 16-AP License
Transceivers	
SFP-GE-SX-MM850-A	1000BASE-SX SFP Transceiver, Multi-Mode (850nm, 550m, LC)

SFP-GE-LX-SM1310-A	1000BASE-LX SFP Transceiver, Single Mode (1310nm, 10km, LC)
SFP-GE-T	SFP GE Copper Interface Transceiver Module (100m,RJ45)
SFP-XG-SX-MM850-E	SFP+ Module(850nm,300m,LC)
SFP-XG-LX-SM1310	SFP+ Module(1310nm,10km,LC)
Cables	
LSWM1STK	SFP+ Cable 0.65m
LSWM2STK	SFP+ Cable 1.2m
LSWM3STK	SFP+ Cable 3m
LSTM1STK	SFP+ Cable 5m

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