

No. M.V-09/2013-14-IT-DA.IV 840  
भारत सरकार/Government of India  
गृह मंत्रालय/Ministry of Home Affairs  
पुलिस आधुनिकीकरण प्रभाग /Police Modernization Division  
संभरण-I डेस्क /Prov.I Desk

26, Man Singh Road, Jaisalmer House,  
New Delhi, dated the 21<sup>st</sup> April, 2015

To,

The DsG: AR, BSF, CISF, CRPF, ITBP, SSB, NSG & BPR&D.

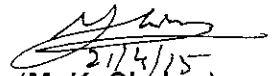
**Subject: QRs and Trial Directives of Network Switches layer-2.**

Sir,

The undersigned is directed to refer to the subject mentioned above and to say that the QRs and Trial Directives in respect of Network Switches layer-2 as per Annex-I and Annex-II, respectively have been approved by the competent authority in MHA.

2. Henceforth, all the CAPFs should trial evaluate and procure the above item, required by them, strictly as per the laid down QRs.
3. Concerned CAPF will be accountable for correctness of the QRs and Trial Directives of Network Switches layer-2.

Yours faithfully,


  
21/4/15  
(M. K. Chahar)

Under Secretary to the Govt. of India

Encl: As above.

Copy forwarded for necessary action to:

- ✓ SO (IT), MHA - with the request to host the QRs and Trial Directives of Network Switches layer-2 on official website of MHA (under the page of Organizational Set up, Police Modernization Division-Communication Equipments). Soft copy is being sent through email also.

  
(R. K. Soni)  
Section officer (Prov-I)

Copy to: DDG (Procurement), MHA

# QR/TECHNICAL SPECIFICATIONS OF NETWORK SWITCHES LAYER-2

## Basic QR / Technical Specifications of Network Switches Layer-2

The Offered Switch Should have Minimum 24 Port 10/100/1000 Base T and 4 Gigabit (RJ45 /SFP) Ethernet port. Each switch should be populated with 2 SFP module for multimode fiber connectivity

The Switch should support non-blocking architecture with minimum switching capacity of 56 GBPS.

The Offered switch should support minimum 41 mpps of forwarding rate (64-byte packets).

Following layer 2 Switching features should be supported by offered switch from day 1

- |                                 |  |
|---------------------------------|--|
| a. Spanning Tree Protocol (STP) | i. 802.1d Spanning Tree support                                      |
|                                 | ii. 802.1w (Rapid Spanning Tree [RSTP])                              |
|                                 | iii. Multiple Spanning Tree 802.1s                                   |
| b. Port grouping                | i. Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP) |
|                                 | ii. Up to 8 groups   |
|                                 | iii. Up to 8 ports per group   |
| c. VLAN                         | i. Support for up to 256 VLANs simultaneously (out of 4096 VLAN IDs) |
|                                 | ii. Port-based and 802.1Q tag-based VLANs                            |
|                                 | iii. MAC-based VLAN  |
|                                 | iv. Management VLAN  |
|                                 | v. Private VLAN Edge (PVE).  |
|                                 | vi. Guest VLAN   |
|                                 | vii. Voice VLAN  |

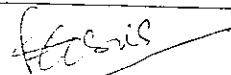
d. The offered switch should support GVRP or GARP or MVRP

e. The offered switch should support Dynamic Host Configuration Protocol (DHCP) Relay at Layer 2 with option 82.

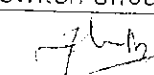
f. The offered switch should support Internet Group Management Protocol (IGMP) versions 1, 2, and 3 snooping. The Switch should support minimum 256 multicast groups.

g. The Offered switch should be able to support source based multicasting.

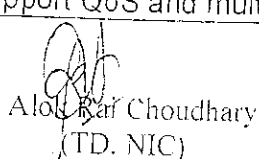
h. The offered switch should support QoS and multicast



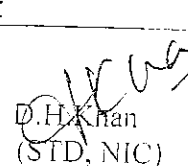
S.M. Hasnain  
(DIG-IT, CRPF)



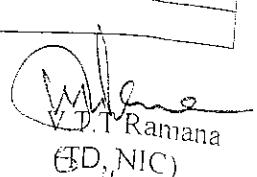
Jagjit Singh  
(TD, NIC)



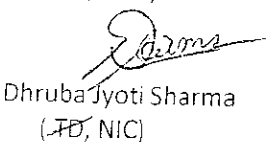
Alok Bar Choudhary  
(TD, NIC)



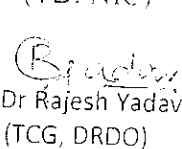
D.H. Khan  
(STD, NIC)



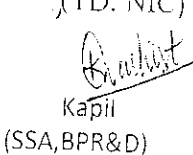
V.D. Ramana  
(ED, NIC)



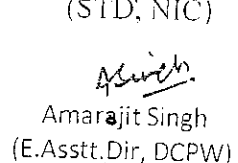
Dhruva Jyoti Sharma  
(TD, NIC)



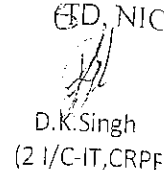
Dr Rajesh Yadav  
(TCG, DRDO)



Kapil  
(SSA, BPR&D)



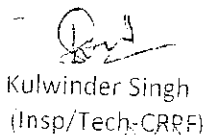
Amarajit Singh  
(E.Asstt, Dir, DCPW)



D.K. Singh  
(2 I/C-IT, CRPF)



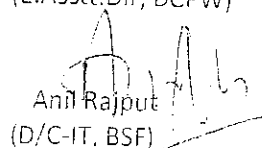
Jayasankar M.N  
(A/C-IT, CRPF)



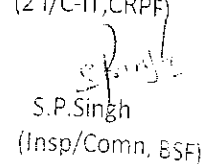
Kulwinder Singh  
(Insp/Tech-CRPF)



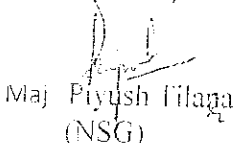
Anil Kamboj  
(SI/Tech-CRPF)



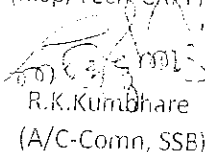
Anil Rajput  
(D/C-IT, BSF)



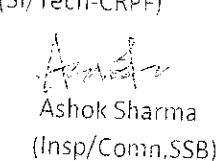
S.P. Singh  
(Insp/Comn, BSF)



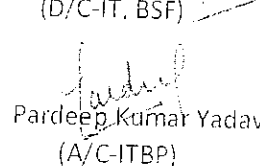
Maj Piyush Tilaga  
(NSG)



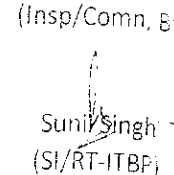
R.K. Kumbhare  
(A/C-Comn, SSB)



Ashok Sharma  
(Insp/Comn, SSB)



Pardeep Kumar Yadav  
(A/C-ITBP)



Sunil Singh  
(SI/RT-ITBP)

Following Security features should be supported by offered switch from day 1

- a. IEEE 802.1X
  - i. 802.1X: RADIUS authentication
  - ii. Dynamic VLAN assignment
- b. The Offered Switch should be able to support Locking of MAC addresses to ports and should also be capable of limiting the number of learned MAC addresses
- c. The Switch should support RADIUS authentication where switch functions as client.
- d. The Switch should support storm control for Broadcast, multicast, and unknown unicast
- e. The Switch should support DoS attack prevention
- f. The Switch should support Access Control List feature using which Dropping and rate limiting can be done based on following
  - i. Source and Destination MAC
  - ii. VLAN ID
  - iii. IP address
  - iv. Protocol
  - v. Port
  - vi. differentiated services code point (DSCP)/IP Precedence
  - vii. TCP/UDP source and destination ports
  - viii. 802.1p priority

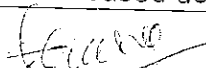
Following Quality of service features should be supported by offered switch from day 1

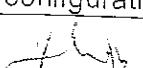
- a. The offered switch should support Priority levels with atleast 4 or more hardware queues.
- b. The Switch should support scheduling using Strict priority and weighted round-robin (WRR) and Queue assignment based on DSCP and class of service (802.1p/CoS)
- c. The Switch should be capable of supporting Class of service based on following
  - i. Port based
  - ii. 802.1p VLAN priority based
  - iii. IPv4/v6 IP precedence/type of service (ToS)/DSCP based
  - iv. Differentiated Services (DiffServ)
- d. The Switch should support rate limiting using Ingress policer; egress shaping and rate control; per VLAN, per port, and flow based.

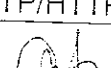
The Offered switch should support IPv6 standard and IPv6 management features from day 1.

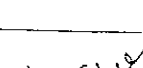
Following Management features should be supported by offered switch from day 1

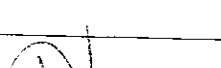
- a. The offered switch should have Built-in switch configuration utility for easy browser-based device configuration (HTTP/HTTPS).

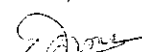
  
S.M. Hasnain  
(DIG-IT, CRPF)

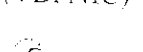
  
Jagjit Singh  
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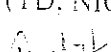
  
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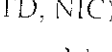
  
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(JD, NIC)


  
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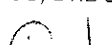
  
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(TCG, DRDO)


  
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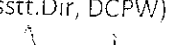
  
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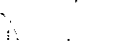
  
Jayasankar M.N  
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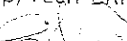
  
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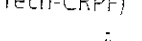
  
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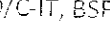
  
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S.P. Singh  
(Insp/Comn. BSF)

  
Maj Piyush Tilaga  
(NSC)

  
R.K. Kumbhare  
(A/C-Comn, SSB)

  
Ashok Sharma  
(Insp/Comn, SSB)

  
Pardeep Kumar Yadav  
(A/C-ITBP)

  
Sunil Singh--  
(SI/RT-ITBP)

- b. The built-in web based utility should be support configuration, system dashboard, system maintenance, and monitoring
- c. The Switch should support SNMP versions 1, 2c, and 3 with support for traps, and SNMP version 3 user-based security model (USM).
- d. The Switch should support remote monitoring with Embedded RMON software agent with support of 4 RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis
- e. The Switch should support firmware upgrade using web, TFTP / FTP and console as well. Switch should support Dual images for resilient firmware upgrades.
- f. The Switch should support port mirroring and VLAN mirroring feature for analysis with a network analyzer or RMON probe.
- g. The Switch should support Text-editable config files easier and faster mass deployments

The Switch should support minimum 8000 mac addresses and jumbo frames with a Frame sizes up to 9 KB supported on Gigabit interfaces.

The switch should support minimum 16MB flash and 128 MB CPU memory

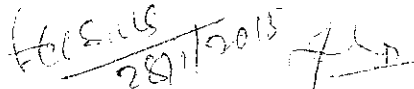
The switch should operate on 220 – 240 V AC with 50Hz power source.

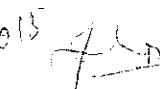
The offered switch should meet following certification

- a. EAL 2/3
- b. UL-60950
- c. CSA-22.2
- d. CE Mark / ICES-003 / VCCI
- e. FCC Part-15(CFR-47) Class A Certification


Switch shall support stacking.


Switch should support basic routing capabilities viz Static/RIP from day 1.

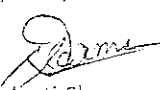
  
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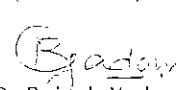
  
Jagjit Singh  
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Alok Rai Choudhary  
(TD, NIC)

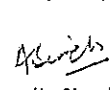
  
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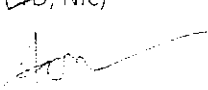
  
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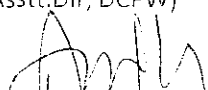
  
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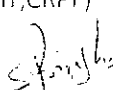
  
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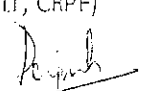
  
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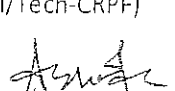
  
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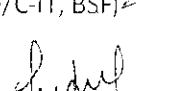
  
Anil Rajput  
(D/C-IT, BSF)

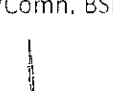
  
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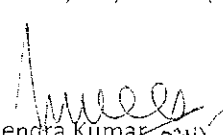
  
Maj Piyush Tilana  
(NSG)

  
R.K. Kumbhare  
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
  
Ashok Sharma  
(Insp/Comn, SSB)

  
Pardeep Kumar Yadav  
(A/C-ITBP)

  
Sunil Singh  
(SI/RT-ITBP)

  
Shailendra Kumar  
(IGP-Comn&Works)

APPROVED/NOT APPROVED

  
Prakash Mishra  
DG CRPF

## TRIAL DIRECTIVE FOR NETWORK SWITCHES LAYER-2

S.No	Technical Specifications	Trial Directive
1	The Offered Switch Should have Minimum 24 Port 10/100/1000 Base T and 4 Gigabit (RJ45/SFP) Ethernet port. Each switch should be populated with 2 SFP module for multimode fiber connectivity	Physical Check for number of ports & SFP modules
2	The Switch should support non-blocking architecture with minimum switching capacity of 56 Gbps.	Verify from product technical guide.
3	The Offered switch should support minimum 41 mpps of forwarding rate (64-byte packets).	Verify from product technical guide
4	Following layer 2 Switching features should be supported by offered switch from day 1	
	a. Spanning Tree Protocol (STP) <ol style="list-style-type: none"> <li>i. 802.1d Spanning Tree support</li> <li>ii. 802.1w (Rapid Spanning Tree [RSTP])</li> <li>iii. Multiple Spanning Tree 802.1s</li> </ol>	View in Technical guide and verify features using Console / Web console View in Technical guide and verify features using Console / Web console View in Technical guide and verify features using Console / Web console
	b. Port grouping <ol style="list-style-type: none"> <li>i. Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP)</li> <li>ii. Up to 8 groups</li> <li>iii. Up to 8 ports per group</li> </ol>	View in Technical guide and verify features using Console / Web console & can be configured View in Technical guide and verify features using Console / Web console & can be configured View in Technical guide and verify features using Console / Web console & can be configured
	c. VLAN <ol style="list-style-type: none"> <li>i. Support for up to 256 VLANs simultaneously (out of 4096 VLAN IDs)</li> <li>ii. Port-based and 802.1Q-based tagging</li> <li>iii. MAC-based VLAN</li> </ol>	View in Technical guide and verify features using Console / Web console & can be configured View in Technical guide and verify features using Console / Web console & can be configured View in Technical guide and verify features using Console / Web console & can be configured

*Handwritten initials/signature*

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Ashok Sharma  
(Insp/Comm, SSIS)

Pardeep Kumar Yadav  
(A/C-TDRP)

Sunil Singh  
(SA/TA-ITRP)

		features using Console / Web console & can be configured	S.M.Hasnain (DIG-IT, CRPF)	Jagjit Singh (TD, NIC)
	iv. Management VLAN	View in Technical guide and verify features using Console / Web console & can be configured	Abhishek Rai Choudhary (TD, NIC)	D.H.Khan (S/D, NIG)
	v. Private VLAN (PV)	View in Technical guide and verify features using Console / Web console & can be configured	V. Mahalingam (TD, NIC)	Dhruba Jyoti Sharma (TD, NIC)
	vi. Guest VLAN	View in Technical guide and verify features using Console / Web console & can be configured	Dr. Rajesh Yadav (FCG, DRDO)	Kapil (SSA, JPRR&G)
	vii. Voice VLAN	View in Technical guide and verify features using Console / Web console & can be configured	Amarajit Singh (Asst. Dir., DCPW)	D. K. Singh (S/C, CRPF)
	d. The offered switch should support GVRP or GARP or MVRP	View in Technical guide and verify features using Console / Web console & can be configured	Jayasankar M.N (A/C-IT, CRPF)	Kulwinder Singh (Asst./Tech-CRPF)
	e. The offered switch should support Dynamic Host Configuration Protocol (DHCP) Relay at Layer 2 with option 82.	View in Technical guide and verify features using Console / Web console & can be configured	Anil Kamboj (S/ITech-CRPF)	Anil Rajpuri (D/C, JPRR&G)
	f. The offered switch should support Internet Group Management Protocol (IGMP) versions 1, 2, and 3 snooping. The Switch should support minimum 256 multicast groups.	View in Technical guide and verify features using Console / Web console & can be configured	S.P. Singh (Insp/Comm, BSF)	Maj Piyush Tilana (NIG)
	g. The Offered switch should be able to support source based multicasting.	View in Technical guide and verify features using Console / Web console & can be configured	R.K.Kumbhare (A/C-Comm, SSB)	Ashok Sharma (Insp/Comm, SSB)
	h. The offered switch should support QoS and multicast	View in Technical guide and verify features using Console / Web console & can be configured		
5	Following Security features should be supported by offered switch from day 1			
	a. IEEE 802.1X	i. 802.1X: RADIUS authentication		
		ii. Dynamic VLAN assignment		
	b. The Offered Switch should be able to support Locking of MAC addresses to ports and should	View in Technical guide and verify features using Console / Web console & can be configured	Pardeep Kumar Yadav (A/C-IT&P)	Sunil Singh (S/IT-IT&P)

	also be capable of limiting the number of learned MAC addresses	console & can be configured	
	c. The Switch should support RADIUS authentication where switch functions as client.	View in Technical guide and verify features using Console / Web console & can be configured	S.M. Hasnain (DIG-IT, CRPF)
	d. The Switch should support storm control for Broadcast, multicast, and unknown unicast	View in Technical guide and verify features using Console / Web console & can be configured	Alorajal Choudhary (FR, NIC)
	e. The Switch should support DoS attack prevention	View in Technical guide and verify features using Console / Web console. (Can be tested by applying DoS attack using simulator)	V. T. Ramana (TD, NIC)
	f. The Switch should support Access Control List feature using which Dropping and rate limiting can be done based on following		Dr. Rajesh Yadav (TRG, DRDD)
	i. Source and Destination MAC	View in Technical guide and verify features using Console / Web console & can be configured	Amarajit Singh (2 I/C-IT, CRPF)
	ii. VLAN ID	View in Technical guide and verify features using Console / Web console & can be configured	Jayasanakar M.N. (A/C-IT, CRPF)
	iii. IP address	View in Technical guide and verify features using Console / Web console & can be configured	Anil Kamboj (SI/Tech-CRPF)
	iv. Protocol	View in Technical guide and verify features using Console / Web console & can be configured	S. P. Singh (Insp/Comm, BSF)
	v. Port	View in Technical guide and verify features using Console / Web console & can be configured	R.K. Kudbhare (A/C-Comm, SSF)
	vi. Differentiated services code point (DSCP)/IP Precedence	View in Technical guide and verify features using Console / Web console & can be configured	Parddeep Kumar Yadav (A/C-ITM)

Jagjit Singh (TD, NIC)

DFF Khan (STD, NIS)

Dhruba Jyoti Sharma (TD, NIC)

Kapali (SSA, JPR&P)

D. K. Singh

Kulwinder Singh (Insp/Tech-CRPF)

Ami Rajput (B/C-IT, BSF)

Maj. Piyush Tilgana (NSG)

Ashok Sharma (Insp/Comm, SSF)




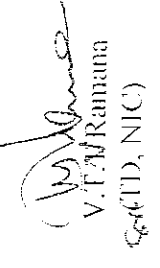





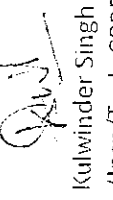

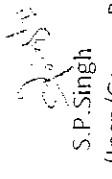
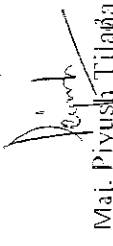

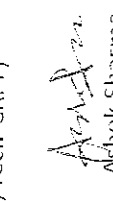
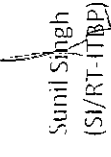

Sunil Singh (SI/NR-ITM)

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<p>vii TCP/UDP source and destination ports</p>	<p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p>	<p>S.M.Hasnain (DIG-IT, CRPF) Jagjit Singh (TD, NIC)</p>
<p>viii 802.1p priority</p>	<p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p>	<p>Alot Raj Choudhary (TD, NIC) D.H.Nandan (TD, NIC)</p>
<p>6 Following Quality of service features should be supported by offered switch from day 1</p> <p>a. The offered switch should support Priority levels with atleast 4 or more hardware queues.</p> <p>b. The Switch should support scheduling using Strict priority and weighted round-robin (WRR) and Queue assignment based on DSCP and class of service (802.1p/CoS)</p> <p>c. The Switch should be capable of supporting Class of service based on following</p> <p>i. Port based</p>	<p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p> <p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p> <p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p>	<p>V.T.T Ramana (TD, NIC) Dhruba Jyoti Sharma (TD, NIC)</p> <p>Dr Rafesh Yadav (TCC, DRDO) Kapil (SSA, IPR&amp;D)</p> <p>Amarjit Singh (ASSTLDr, DCPW) D.K.Singh (Z/IC-IT, CRPF)</p>
<p>ii. 802.1p VLAN priority based</p>	<p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p>	<p>Jayasankar M.N (A/C-IT, CRPF) Kulwinder Singh (Insp/Tech-CRPF)</p>
<p>iii. IPv4/v6 IP precedence/type of service (ToS)/DSCP based</p>	<p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p> <p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p>	<p>Anil Kamboj (S/ITech-CRPF) Anil Rajbhar (D/C-IT, ISF)</p> <p>S.P.Singh (Insp/Comm, ISF) Maj Piyush Tilaga (NSG)</p> <p>R.K.Kumbhare (A/C-Comm, SSB) Ashok Sharma (Insp/Comm, SSB)</p>
<p>Pardeep Kumar Yadav (A/C-IT&amp;IP)</p>	<p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p>	<p>Sunil Singh (S/IT&amp;IP)</p>

<p>iv. Differentiated Services (DiffServ)</p> <p>d. The Switch should support rate limiting using Ingress policer, egress shaping and rate control per VLAN, per port, and flow based.</p>	<p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p> <p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p>	<p>S.M. Hasnain (DIG-IT, CRPF)</p> <p>Jagjit Singh (TD, NIC)</p> <p>Alok Choudhary (TD, NIC)</p> <p>D/H. Kumar (SRB, NIC)</p> <p>V. T. Ramana (TD, NIC)</p> <p>Dirubha Jyoti Sharma (TD, NIC)</p>
<p>7. The Offered switch should support IPv6 standard and IPv6 management features from day 1.</p>	<p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p>	<p>Dr. Rajesh Yadav (TCC, DRDO)</p> <p>Kapil (SSA, IPR&amp;D)</p>
<p>8. Following Management features should be supported by offered switch from day 1</p> <p>a. The offered switch should have Built-in switch configuration utility for easy browser-based device configuration (HTTP/HTTPS).</p> <p>b. The built-in web based utility should be support configuration, system dashboard, system maintenance, and monitoring</p> <p>c. The Switch should support SNMP versions 1, 2c, and 3 with support for traps, and SNMP version 3 user-based security model (USM).</p> <p>d. The Switch should support remote monitoring with Embedded RMON software agent with support of 4 RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis</p> <p>e. The Switch should support firmware upgrade using web, TFTP / FTP and console as well. Switch should support Dual images for resilient firmware upgrades.</p> <p>f. The Switch should support port mirroring and VLAN mirroring feature for analysis with a network analyzer or RMON probe.</p> <p>g. The Switch should support Text-editable config files easier and faster mass deployments</p>	<p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p> <p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p> <p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p> <p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p> <p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p> <p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p> <p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p>	<p>Amarajit Singh (Asstt. Dir, DCPW)</p> <p>D.K. Singh (I/C-IT, CRPF)</p> <p>Dayasankar M.N (A/C-IT, CRPF)</p> <p>Kulwinder Singh (Insp/Tech-CRPF)</p> <p>Anil Kambhoj (SI/Tech-CRPF)</p> <p>Anil Rajpurohit (D/C-IT, BSF)</p> <p>S.P. Singh (Insp/Comm, BSF)</p> <p>Mal Piyush Tilgani (Insp/Comm, BSF)</p> <p>R.K. Kumbhare (A/C-Comm, SSBI)</p> <p>Ashok Sharma (Insp/Comm, SSBI)</p>
<p>9. The Switch should support minimum 8000 mac addresses and jumbo frames with a Frame sizes up to 9 KIB supported on Gigabit interfaces.</p>	<p>View in Technical guide and verify features using Console / Web console &amp; can be configured</p>	<p>Pardeep Kumar Yadav (A/C-IT&amp;P)</p> <p>Sani Singh (SI/IT&amp;P)</p>

10	The switch should support minimum 16MB flash and 128 MB CPU memory	View in Technical guide and verify features using Console / Web console & can be configured
11	The switch should operate on 220 -- 240 V AC with 50Hz power source.	View in Technical guide and match with supplied product.
12	The offered switch should meet following certification a. EAL 2/3 b) UL-60950 c) CSA-22.2 d) CE Mark / ICES-003 / VCCI e) FCC Part-15(CFR-47) Class A Certification Switch shall support stacking.	View in Technical guide and verify features using Console / Web console & can be configured
13	Switch should support basic routing capabilities viz Static/RIP from day 1.	View in Technical guide and verify features using Console / Web console & can be configured

 S.M. Hasnain (DIG-IT, CRPF)	 Jagjit Singh (TD, NIC)	 Alok Rai Choudhary (TD, NIC)	 V.P. Ramana (S&TD, NIC)
 Dhruva Jyoti Sharma (TD, NIC)	 Dr. Rajesh Yadav (TCG, DRDO)	 Kapil (SSA, BPR&D)	 D.K. Singh (2 I/C-IT, CRPF)
 Javanskar M.N. (A/C-IT, CRPF)	 Kulwinder Singh (Insp/Tech-CRPF)	 Anil Kamboj (SI/Tech-CRPF)	 S.P. Singh (Insp/Comm, BSF)
 Maj. Piyush Tilgaj (NSC)	 R.K. Kumbhare (A/C-Comm, SSB)	 Ashok Sharma (Insp/Comm, SSB)	 Sunil Singh (SI/RT-ITBP)
 Shailesh Kumar (IGP-Comm&Works)			

APPROVED/NOT APPROVED



Prakash Mishra  
DG CRPF