

STANDAR OPERASIONAL PROSEDUR

PERMINTAAN & PENGELOLAAN AKSES JARINGAN (VLAN/PORT)

DOKUMEN SOP

Nomor SOP 012/PPTIK/SOP/2024
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Tanggal Efektif 01 Januari 2025
Edisi/Revisi 01
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UNIVERSITAS MUHAMMADIYAH MATARAM

PUSAT PENGEMBANGAN TEKNOLOGI INFORMASI DAN KOMUNIKASI (PPTIK)

Terakreditasi B

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LEMBAR PENGESAHAN

Jabatan	Nama	Tanda Tangan	Tanggal
Dibuat oleh: Network Administrator	Nova kurniawan		/...../2024
Diperiksa oleh: Koordinator Jaringan	Nova kurniawan		/...../2024
Disahkan oleh: Kepala PPTIK	M.Rizkillah		/...../2024

1. TUJUAN

Prosedur ini bertujuan untuk: 1. Menyediakan framework terstruktur untuk permintaan akses jaringan 2. Mengimplementasikan network segmentation yang aman 3. Memastikan traceability dan accountability akses jaringan 4. Mendukung zero trust network architecture 5. Memfasilitasi compliance dan audit

2. RUANG LINGKUP

SOP ini mencakup: - Permintaan dan provisioning port jaringan - Pembuatan dan pengelolaan VLAN - Network Access Control (NAC) - Inter-VLAN routing dan ACL - Port security dan 802.1X wired - IP Address Management (IPAM) - Decommissioning dan cleanup

3. DEFINISI

<i>Istilah</i>	<i>Definisi</i>
VLAN	<i>Virtual LAN, segmentasi jaringan logical</i>
Trunk Port	<i>Port yang membawa multiple VLAN dengan tagging</i>
Access Port	<i>Port untuk single VLAN (untagged)</i>
NAC	<i>Network Access Control, kontrol akses berbasis policy</i>
802.1X	<i>Port-based network access control</i>
IPAM	<i>IP Address Management System</i>
ACL	<i>Access Control List untuk filtering traffic</i>
SVI	<i>Switch Virtual Interface untuk inter-VLAN routing</i>

4. REFERENSI

1. UU No. 11 Tahun 2008 jo. UU No. 19 Tahun 2016 tentang ITE
2. UU No. 27 Tahun 2022 tentang Perlindungan Data Pribadi
3. ISO/IEC 27001:2022 tentang ISMS
4. Zero Trust Architecture (NIST SP 800-207)
5. Best Practice Network Segmentation

5. PENANGGUNG JAWAB

<i>No</i>	<i>Jabatan</i>	<i>Tanggung Jawab</i>
1	Kepala PPTIK	Approval VLAN strategis
2	Koordinator Jaringan	Oversight dan planning
3	Network Administrator	Konfigurasi dan maintenance
4	Security Analyst	Security review
5	Network Technician	Instalasi fisik
6	IPAM Administrator	IP address management

6. ARSITEKTUR VLAN

6.1 VLAN Masterlist

<i>VLAN ID</i>	<i>Nama</i>	<i>Segmen</i>	<i>Subnet</i>	<i>Gateway</i>
1	NATIVE	Native VLAN (unused)	-	-
10	MGMT	Management devices	10.10.10.0/24	10.10.10.1
20	SERVER-PROD	Production servers	10.10.20.0/24	10.10.20.1
21	SERVER-DEV	Development servers	10.10.21.0/24	10.10.21.1
30	ADMIN	Administrasi pusat	10.10.30.0/24	10.10.30.1
40-49	FAKULTAS	Per-fakultas	10.10.4X.0/24	10.10.4X.1
50	LAB	Laboratorium	10.10.50.0/23	10.10.50.1
60	MAHASISWA A	Area mahasiswa A	10.10.60.0/22	10.10.60.1
70	IOT	IoT Devices	10.10.70.0/24	10.10.70.1
80	CCTV	Surveillance	10.10.80.0/24	10.10.80.1
90	VOIP	Voice over IP	10.10.90.0/24	10.10.90.1
100	GUEST	Guest network	10.10.100.0/23	10.10.100.1
999	QUARANTINE	Quarantine/ Remediation	10.10.99.0/24	10.10.99.1

6.2 Inter-VLAN Policy Matrix

<i>Source</i>	<i>Dest</i>	<i>MGMT</i>	<i>SERVER</i>	<i>ADMIN</i>	<i>FAKULTAS</i>	<i>LAB</i>	<i>GUEST</i>
MGMT		✓	✓	✓	✓	✓	✓
SERVER		Limited	✓	✓	✓	✓	X
ADMIN		X	✓	✓	✓	✓	X
FAKULTAS		X	✓	✓	✓	✓	X
LAB		X	Limited	X	X	✓	X
GUEST		X	X	X	X	X	Internet Only

7. PROSEDUR

7.1 Permintaan Port Jaringan Baru

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
1	Submit request via portal/form	Pemohon	-	Request	FM_NET_077

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
2	Verify pemohon dan kebutuhan	Network Admin	1 hari	Verified	FM_NET_077
3	Approval atasan langsung	Approval	2 hari	Approved	FM_NET_077
4	Assign VLAN dan IP address	IPAM Admin	1 hari	IP Assigned	FM_NET_078
5	Survey lokasi instalasi	Network Tech	1 hari	Survey	FM_NET_079
6	Physical cabling installation	Network Tech	1-3 hari	Cable Done	FM_NET_080
7	Patch panel termination dan labeling	Network Tech	1 hari	Terminated	FM_NET_080
8	Configure switch port	Network Admin	1 jam	Configured	FM_NET_081
9	Enable port security/802.1X	Network Admin	30 menit	Secured	FM_NET_081
10	Testing connectivity	Network Admin	30 menit	Tested	FM_NET_082
11	Serah terima ke user	Network Admin	30 menit	BAST	FM_NET_083
12	Update documentation	Network Admin	30 menit	Updated	FM_NET_084

7.2 Permintaan VLAN Baru

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
1	Submit business justification	Pemohon	-	Request	FM_NET_085
2	Technical requirement analysis	Network Admin	3 hari	Analysis	FM_NET_086
3	Security assessment	Security Analyst	3 hari	Assessment	FM_NET_087
4	Design VLAN (ID, subnet, routing)	Network Admin	2 hari	Design	FM_NET_088
5	ACL/firewall rules design	Security Analyst	2 hari	Rules	FM_NET_088
6	Peer review design	Koordinator	2 hari	Reviewed	FM_NET_088
7	Approval Kepala PPTIK	Kepala PPTIK	3 hari	Approved	FM_NET_085

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
8	Create VLAN on all switches	Network Admin	2 hari	Created	FM_NET_089
9	Configure SVI dan routing	Network Admin	1 hari	Routing OK	FM_NET_089
10	Implement ACL	Network Admin	1 hari	ACL Active	FM_NET_089
11	Configure DHCP scope	Network Admin	1 jam	DHCP OK	FM_NET_089
12	Testing full connectivity	Network Admin	1 hari	Tested	FM_NET_090
13	Security validation	Security Analyst	1 hari	Validated	FM_NET_090
14	Documentation	Network Admin	1 hari	Documented	FM_NET_091

7.3 Perubahan Konfigurasi Port/VLAN

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
1	Submit change request	Pemohon	-	Request	FM_NET_092
2	Impact analysis	Network Admin	1 hari	Impact	FM_NET_092
3	Approval sesuai kategori	Approver	1-3 hari	Approved	FM_NET_092
4	Schedule change window	Network Admin	-	Scheduled	FM_NET_092
5	Backup current config	Network Admin	15 menit	Backup	-
6	Implement change	Network Admin	Varies	Changed	FM_NET_093
7	Verify dan testing	Network Admin	30 menit	Verified	FM_NET_093
8	Post-change monitoring	Network Admin	24 jam	Monitored	FM_NET_093
9	Update documentation	Network Admin	30 menit	Updated	FM_NET_093

7.4 Network Access Control (NAC)

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
1	Device connect ke port	User	-	Connection	-
2	NAC authentication check	NAC System	Auto	Auth Result	-
3	Health/compliance check	NAC System	Auto	Health Result	-

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
4a	<i>If compliant → Assign proper VLAN</i>	<i>NAC System</i>	<i>Auto</i>	<i>Access Granted</i>	<i>-</i>
4b	<i>If non-compliant → Quarantine VLAN</i>	<i>NAC System</i>	<i>Auto</i>	<i>Quarantined</i>	<i>FM_NET_094</i>
5	<i>Remediation guidance</i>	<i>System</i>	<i>Auto</i>	<i>Instructions</i>	<i>FM_NET_094</i>
6	<i>Re-assessment after remediation</i>	<i>NAC System</i>	<i>Auto</i>	<i>Re-assessed</i>	<i>-</i>
7	<i>Exception request (jika perlu)</i>	<i>User</i>	<i>-</i>	<i>Exception</i>	<i>FM_NET_095</i>

7.5 Port Decommissioning

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
1	<i>Request decommission</i>	<i>Pemohon/Admin</i>	<i>-</i>	<i>Request</i>	<i>FM_NET_096</i>
2	<i>Verify port tidak digunakan</i>	<i>Network Admin</i>	<i>1 hari</i>	<i>Verified</i>	<i>FM_NET_096</i>
3	<i>Notify associated user</i>	<i>Network Admin</i>	<i>3 hari</i>	<i>Notified</i>	<i>-</i>
4	<i>Disable port</i>	<i>Network Admin</i>	<i>15 menit</i>	<i>Disabled</i>	<i>FM_NET_096</i>
5	<i>Remove cable (jika perlu)</i>	<i>Network Tech</i>	<i>1 hari</i>	<i>Removed</i>	<i>FM_NET_096</i>
6	<i>Release IP address</i>	<i>IPAM Admin</i>	<i>15 menit</i>	<i>Released</i>	<i>FM_NET_096</i>
7	<i>Update documentation</i>	<i>Network Admin</i>	<i>15 menit</i>	<i>Updated</i>	<i>FM_NET_096</i>

7.6 VLAN Audit dan Cleanup

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Frekuensi</i>	<i>Output</i>	<i>Dokumen</i>
1	<i>Audit port assignment</i>	<i>Network Admin</i>	<i>Quarterly</i>	<i>Audit Report</i>	<i>FM_NET_097</i>
2	<i>Identify unused ports</i>	<i>Network Admin</i>	<i>Quarterly</i>	<i>Unused List</i>	<i>FM_NET_097</i>
3	<i>Verify VLAN necessity</i>	<i>Network Admin</i>	<i>Annual</i>	<i>VLAN Review</i>	<i>FM_NET_098</i>
4	<i>Remove orphaned VLANs</i>	<i>Network Admin</i>	<i>Annual</i>	<i>Cleaned</i>	<i>FM_NET_098</i>
5	<i>ACL effectiveness review</i>	<i>Security Analyst</i>	<i>Quarterly</i>	<i>ACL Review</i>	<i>FM_NET_099</i>

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Frekuensi</i>	<i>Output</i>	<i>Dokumen</i>
6	<i>Documentation accuracy check</i>	<i>Network Admin</i>	<i>Quarterly</i>	<i>Doc Check</i>	<i>FM_NET_100</i>

8. PORT SECURITY STANDARDS

8.1 Standard Port Configuration

```
! Access Port Template
interface GigabitEthernet1/0/X
description [UNIT]-[ROOM]-[OUTLET]
switchport mode access
switchport access vlan [VLAN_ID]
switchport port-security
switchport port-security maximum 2
switchport port-security violation restrict
switchport port-security mac-address sticky
spanning-tree portfast
spanning-tree bpduguard enable
storm-control broadcast level 10
no cdp enable
```

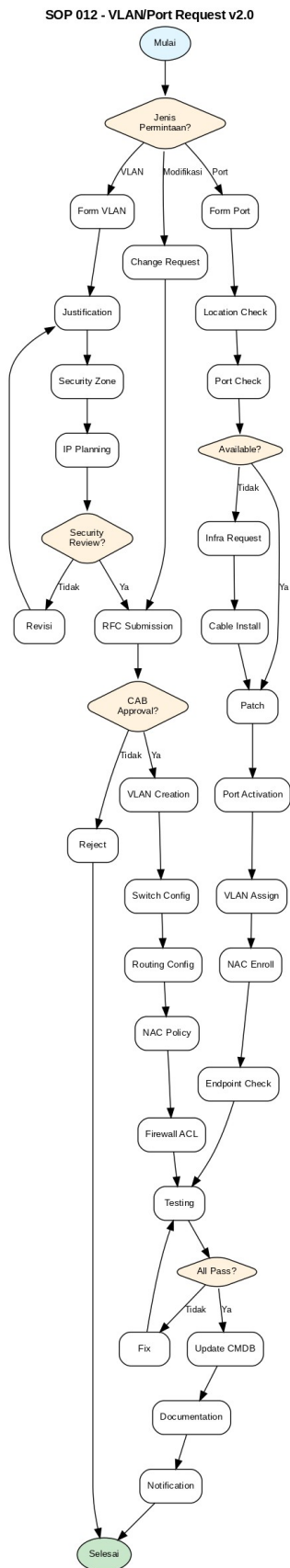
8.2 802.1X Port Configuration

```
! 802.1X Port Template
interface GigabitEthernet1/0/X
switchport mode access
authentication host-mode multi-auth
authentication port-control auto
authentication periodic
dot1x pae authenticator
dot1x timeout tx-period 10
```

9. KEY PERFORMANCE INDICATORS

<i>KPI</i>	<i>Target</i>	<i>Pengukuran</i>
<i>Port Provisioning Time</i>	<i>≤ 5 hari kerja</i>	<i>Per request</i>
<i>VLAN Creation Time</i>	<i>≤ 15 hari kerja</i>	<i>Per request</i>
<i>Documentation Accuracy</i>	<i>≥ 98%</i>	<i>Quarterly audit</i>
<i>Unauthorized Access Attempts</i>	<i>0 successful</i>	<i>Monthly</i>
<i>Port Utilization</i>	<i>≤ 80%</i>	<i>Quarterly</i>

10. FLOWCHART



11. DOKUMEN TERKAIT

<i>Kode</i>	<i>Nama Form</i>	<i>Fungsi</i>
<i>FM_NET_077</i>	<i>Form Permintaan Port Jaringan</i>	<i>Request port</i>
<i>FM_NET_078</i>	<i>Form IP Address Assignment</i>	<i>Assign IP</i>
<i>FM_NET_079</i>	<i>Form Site Survey Cabling</i>	<i>Survey kabel</i>
<i>FM_NET_080</i>	<i>Form Cabling Installation</i>	<i>Instalasi kabel</i>
<i>FM_NET_081</i>	<i>Form Port Configuration</i>	<i>Konfigurasi port</i>
<i>FM_NET_082</i>	<i>Form Connectivity Test</i>	<i>Testing koneksi</i>
<i>FM_NET_083</i>	<i>Form Berita Acara Serah Terima</i>	<i>BAST</i>
<i>FM_NET_084</i>	<i>Form Port Documentation</i>	<i>Dokumentasi port</i>
<i>FM_NET_085</i>	<i>Form Permintaan VLAN Baru</i>	<i>Request VLAN</i>
<i>FM_NET_086</i>	<i>Form Technical Analysis</i>	<i>Analisis teknis</i>
<i>FM_NET_087</i>	<i>Form Security Assessment</i>	<i>Penilaian keamanan</i>
<i>FM_NET_088</i>	<i>Form VLAN Design</i>	<i>Desain VLAN</i>
<i>FM_NET_089</i>	<i>Form VLAN Implementation</i>	<i>Implementasi VLAN</i>
<i>FM_NET_090</i>	<i>Form VLAN Testing</i>	<i>Testing VLAN</i>
<i>FM_NET_091</i>	<i>Form VLAN Documentation</i>	<i>Dokumentasi VLAN</i>
<i>FM_NET_092</i>	<i>Form Change Request</i>	<i>Request perubahan</i>
<i>FM_NET_093</i>	<i>Form Change Implementation</i>	<i>Implementasi perubahan</i>
<i>FM_NET_094</i>	<i>Form NAC Quarantine Log</i>	<i>Log karantina</i>
<i>FM_NET_095</i>	<i>Form NAC Exception Request</i>	<i>Exception NAC</i>
<i>FM_NET_096</i>	<i>Form Port Decommission</i>	<i>Decommission port</i>
<i>FM_NET_097</i>	<i>Form Port Audit Report</i>	<i>Audit port</i>
<i>FM_NET_098</i>	<i>Form VLAN Audit Report</i>	<i>Audit VLAN</i>
<i>FM_NET_099</i>	<i>Form ACL Review</i>	<i>Review ACL</i>
<i>FM_NET_100</i>	<i>Form Documentation Accuracy Check</i>	<i>Cek dokumentasi</i>

12. CATATAN REVISI

<i>Revisi</i>	<i>Tanggal</i>	<i>Uraian Perubahan</i>	<i>Oleh</i>
<i>00</i>	<i>15/12/2021</i>	<i>Dokumen awal</i>	<i>Tim PPTIK</i>
<i>01</i>	<i>01/12/2024</i>	<i>Penambahan: NAC/802.1X, zero trust, IPAM integration, port security standards, inter-VLAN policy matrix, decommissioning, audit procedures</i>	<i>Tim PPTIK</i>

Dokumen ini adalah milik PPTIK UMMAT dan tidak boleh diperbanyak tanpa izin tertulis