

STANDAR OPERASIONAL PROSEDUR

MONITORING & PEMELIHARAAN JARINGAN

DOKUMEN SOP

Nomor SOP 007/PPTIK/SOP/2024
Tanggal Pembuatan 15 Desember 2021
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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: Koordinator Jaringan	Nova kurniawan		/...../2024
Diperiksa oleh: Kepala Divisi Infrastruktur	Nova kurniawan		/...../2024
Disahkan oleh: Kepala PPTIK	M.Rizkillah		/...../2024

1. TUJUAN

Prosedur ini bertujuan untuk: 1. Memastikan monitoring jaringan 24/7 dengan sistem otomatis 2. Mendeteksi anomali dan gangguan secara proaktif 3. Melakukan pemeliharaan preventif untuk mencegah downtime 4. Mengoptimalkan performa jaringan berdasarkan data analytics 5. Memenuhi SLA layanan jaringan

2. RUANG LINGKUP

SOP ini mencakup: - Monitoring real-time dengan NMS (Network Management System) - Pemantauan bandwidth, latency, packet loss, dan jitter - Alerting dan notification system - Pemeliharaan preventif dan korektif - Performance reporting dan analytics - Capacity planning

3. DEFINISI

<i>Istilah</i>	<i>Definisi</i>
NMS	<i>Network Management System, platform monitoring terpusat</i>
SNMP	<i>Simple Network Management Protocol untuk pengumpulan data</i>
Bandwidth	<i>Kapasitas transfer data jaringan (Mbps/Gbps)</i>
Latency	<i>Waktu tunda pengiriman paket data (ms)</i>
Packet Loss	<i>Persentase paket data yang hilang</i>
Jitter	<i>Variasi latency dalam transmisi data</i>
Threshold	<i>Batas nilai yang memicu alert</i>
NOC	<i>Network Operations Center, pusat operasi jaringan</i>

4. REFERENSI

- UU No. 11 Tahun 2008 jo. UU No. 19 Tahun 2016 tentang ITE*
- ISO/IEC 27001:2022 tentang ISMS*
- ITIL v4 Framework*
- Best Practice Network Monitoring (Nagios, Zabbix, PRTG)*
- Kebijakan Pengelolaan Jaringan PPTIK*

5. PENANGGUNG JAWAB

<i>No</i>	<i>Jabatan</i>	<i>Tanggung Jawab</i>
1	<i>Kepala PPTIK</i>	<i>Oversight dan eskalasi level 3</i>
2	<i>Koordinator Jaringan</i>	<i>Perencanaan dan supervisi</i>
3	<i>Network Administrator</i>	<i>Monitoring dan respon harian</i>
4	<i>NOC Operator</i>	<i>Monitoring 24/7 dan first response</i>
5	<i>Network Technician</i>	<i>Pemeliharaan fisik</i>

6. TOOLS MONITORING

<i>Tool</i>	<i>Fungsi</i>	<i>Target</i>
<i>Zabbix/Nagios</i>	<i>Infrastructure monitoring</i>	<i>Server, Network</i>
<i>PRTG/LibreNMS</i>	<i>Bandwidth monitoring</i>	<i>All devices</i>
<i>Grafana</i>	<i>Dashboard & visualization</i>	<i>Metrics</i>
<i>ELK Stack</i>	<i>Log aggregation</i>	<i>Logs</i>
<i>Ntopng</i>	<i>Traffic analysis</i>	<i>Network flows</i>

7. THRESHOLD & ALERTING

<i>Metric</i>	<i>Warning</i>	<i>Critical</i>	<i>Action</i>
<i>CPU Usage</i>	<i>> 70%</i>	<i>> 90%</i>	<i>Investigate / Optimize</i>
<i>Memory Usage</i>	<i>> 75%</i>	<i>> 90%</i>	<i>Investigate / Upgrade</i>
<i>Bandwidth Utilization</i>	<i>> 70%</i>	<i>> 90%</i>	<i>Capacity planning</i>
<i>Latency</i>	<i>> 50ms</i>	<i>> 100ms</i>	<i>Troubleshoot</i>
<i>Packet Loss</i>	<i>> 1%</i>	<i>> 5%</i>	<i>Immediate action</i>
<i>Device Down</i>	<i>-</i>	<i>Immediate</i>	<i>Incident response</i>

8. PROSEDUR

8.1 Monitoring Real-Time (24/7)

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
<i>1</i>	<i>Pantau dashboard NMS</i>	<i>NOC Operator</i>	<i>Continuou s</i>	<i>Status Real- time</i>	<i>-</i>
<i>2</i>	<i>Cek alert dan notification</i>	<i>NOC Operator</i>	<i>Continuou s</i>	<i>Alert List</i>	<i>FM_NET_010</i>
<i>3</i>	<i>Verifikasi status perangkat critical</i>	<i>NOC Operator</i>	<i>Per jam</i>	<i>Status Report</i>	<i>-</i>
<i>4</i>	<i>Respond to warning alerts</i>	<i>NOC Operator</i>	<i>< 15 menit</i>	<i>Initial Response</i>	<i>FM_NET_010</i>
<i>5</i>	<i>Escalate critical alerts</i>	<i>NOC Operator</i>	<i>< 5 menit</i>	<i>Escalation</i>	<i>FM_NET_010</i>
<i>6</i>	<i>Dokumentasi incident</i>	<i>NOC Operator</i>	<i>Real-time</i>	<i>Incident Log</i>	<i>FM_NET_011</i>

8.2 Monitoring Harian

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
<i>1</i>	<i>Review overnight alerts</i>	<i>Network Admin</i>	<i>08:00</i>	<i>Alert Summary</i>	<i>FM_NET_010</i>
<i>2</i>	<i>Check bandwidth utilization trends</i>	<i>Network Admin</i>	<i>09:00</i>	<i>Bandwidth Report</i>	<i>-</i>

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
3	Verify backup job status	Network Admin	09:30	Backup Status	-
4	Monitor top talkers dan traffic patterns	Network Admin	10:00	Traffic Analysis	FM_NET_012
5	Daily health check report	Network Admin	16:00	Daily Report	FM_NET_013
6	Handover shift (jika applicable)	NOC Operator	Shift change	Handover Notes	-

8.3 Monitoring Mingguan

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Waktu</i>	<i>Output</i>	<i>Dokumen</i>
1	Analisis trend performance mingguan	Network Admin	Senin	Trend Report	FM_NET_014
2	Review dan tuning threshold	Network Admin	Selasa	Threshold Update	-
3	Capacity utilization analysis	Koordinator	Rabu	Capacity Report	FM_NET_015
4	Security log review	Security Analyst	Kamis	Security Report	-
5	Compile weekly summary report	Network Admin	Jumat	Weekly Report	FM_NET_016
6	Weekly team briefing	Koordinator	Jumat	Meeting Notes	-

8.4 Pemeliharaan Preventif

<i>No</i>	<i>Aktivitas</i>	<i>Pelaksana</i>	<i>Frekuensi</i>	<i>Output</i>	<i>Dokumen</i>
1	Pembersihan fisik perangkat	Network Tech	Bulanan	Clean Devices	FM_NET_017
2	Pengecekan koneksi dan labeling kabel	Network Tech	Bulanan	Cable Status	FM_NET_017
3	Verifikasi dan testing redundancy	Network Admin	Bulanan	Redundancy OK	FM_NET_018
4	Firmware/patch update (non-critical)	Network Admin	Quarterly	Updated Devices	FM_NET_019
5	Configuration	Network Admin	Mingguan	Backup	-

No	Aktivitas	Pelaksana	Frekuensi	Output	Dokumen
	backup verification			Verified	
6	UPS dan power testing	Network Tech	Quarterly	Power Status	FM_NET_017
7	A/C dan cooling system check	Facility	Bulanan	Cooling OK	-

8.5 Performance Optimization

No	Aktivitas	Pelaksana	Waktu	Output	Dokumen
1	Identify performance bottlenecks	Network Admin	Monthly	Analysis Report	FM_NET_020
2	QoS policy review dan adjustment	Network Admin	Quarterly	QoS Updated	-
3	Traffic shaping optimization	Network Admin	As needed	Config Updated	-
4	Load balancing evaluation	Koordinator	Quarterly	LB Report	FM_NET_020
5	Capacity planning recommendation	Koordinator	Semester	Capacity Plan	FM_NET_021

9. ESKALASI MATRIX

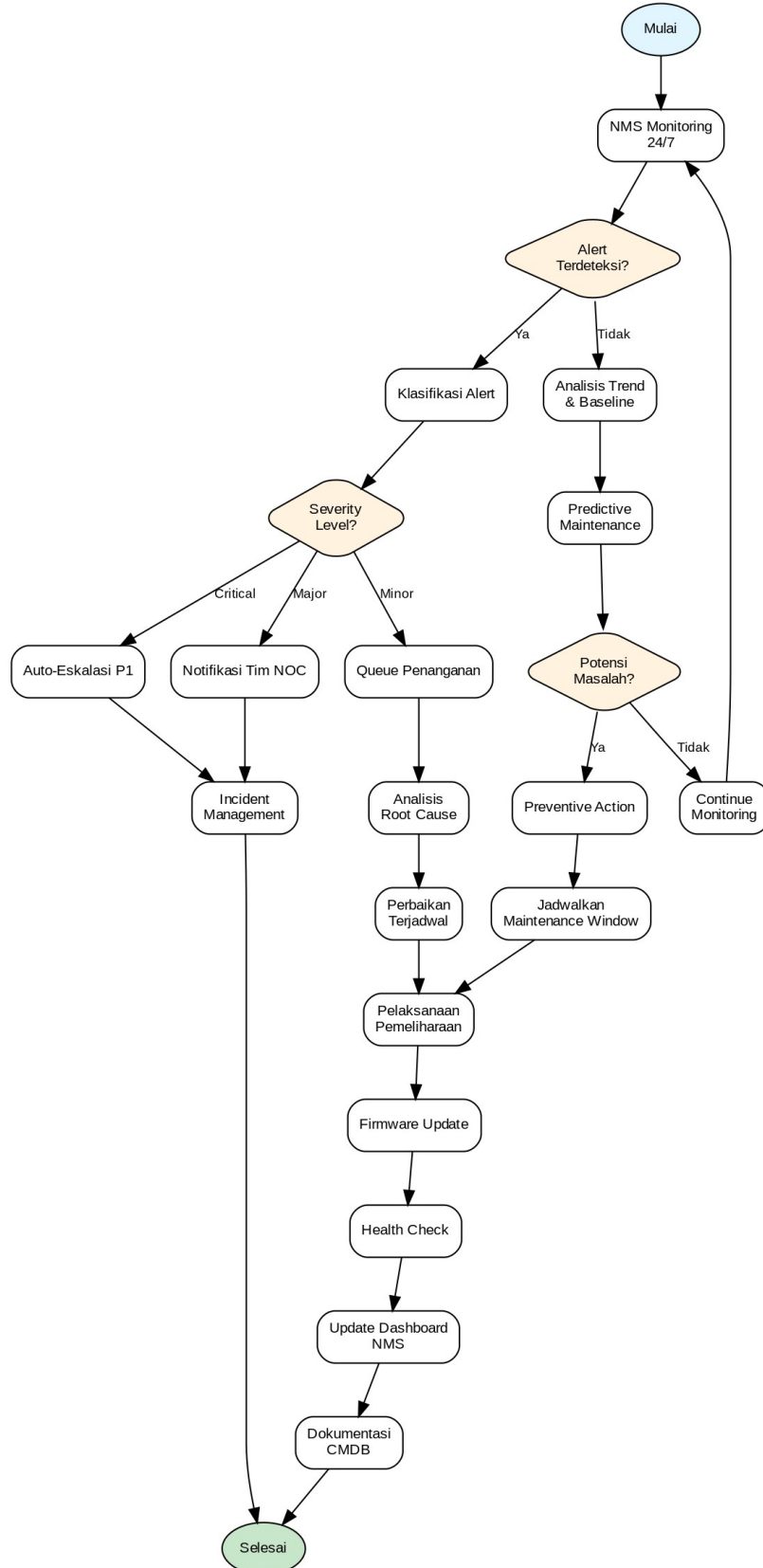
Level	Kondisi	Responder	Waktu Respon
L1	Warning alert, minor issue	NOC Operator	15 menit
L2	Critical alert, service degradation	Network Admin	30 menit
L3	Major outage, multiple services	Koordinator	1 jam
L4	Campus-wide outage	Kepala PPTIK	1 jam

10. KEY PERFORMANCE INDICATORS

KPI	Target	Pengukuran
Network Availability	$\geq 99.5\%$	Monthly
Mean Time to Detect (MTTD)	≤ 5 menit	Per incident
Mean Time to Respond (MTTR)	≤ 30 menit	Per incident
Planned vs Unplanned Downtime	80:20	Monthly
Preventive Maintenance Compliance	100%	Monthly

11. FLOWCHART

SOP 007 - Monitoring & Pemeliharaan v2.0



12. DOKUMEN TERKAIT

<i>Kode</i>	<i>Nama Form</i>	<i>Fungsi</i>
<i>FM_NET_010</i>	<i>Form Alert Response Log</i>	<i>Dokumentasi respon alert</i>
<i>FM_NET_011</i>	<i>Form Incident Log</i>	<i>Pencatatan insiden</i>
<i>FM_NET_012</i>	<i>Form Traffic Analysis</i>	<i>Analisis traffic</i>
<i>FM_NET_013</i>	<i>Form Daily Health Check</i>	<i>Laporan harian</i>
<i>FM_NET_014</i>	<i>Form Weekly Trend Report</i>	<i>Laporan trend mingguan</i>
<i>FM_NET_015</i>	<i>Form Capacity Analysis</i>	<i>Analisis kapasitas</i>
<i>FM_NET_016</i>	<i>Form Weekly Summary</i>	<i>Ringkasan mingguan</i>
<i>FM_NET_017</i>	<i>Checklist Pemeliharaan Preventif</i>	<i>PM checklist</i>
<i>FM_NET_018</i>	<i>Form Redundancy Test</i>	<i>Testing redundancy</i>
<i>FM_NET_019</i>	<i>Form Firmware Update Log</i>	<i>Log update firmware</i>
<i>FM_NET_020</i>	<i>Form Performance Analysis</i>	<i>Analisis performa</i>
<i>FM_NET_021</i>	<i>Form Capacity Planning</i>	<i>Perencanaan kapasitas</i>

13. 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: NMS 24/7, threshold alerting, eskalasi matrix, KPI, capacity planning, automated monitoring</i>	<i>Tim PPTIK</i>

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