

ABSTRAK

Server dan router merupakan komponen yang penting pada suatu jaringan sehingga setiap server dan router perlu dipantau kondisinya dan di perbaiki jika diperlukan. Prometheus merupakan salah satu aplikasi monitoring yang dapat digunakan untuk memantau kondisi server dan router. Dengan menggunakan API yang disediakan Prometheus, maka dibuatlah aplikasi monitoring yang dapat disesuaikan dengan kebutuhan pengguna dan memiliki semua keunggulan yang dimiliki Prometheus. Untuk dapat mengumpulkan data, Prometheus memerlukan exporter-exporter yang diinstall pada server yang akan dimonitor. Aplikasi monitoring yang dibuat akan menarik data dari Prometheus API, mengolahnya, kemudian menampilkannya dalam bentuk tabel dan grafik. Aplikasi dapat menampilkan data berupa *memory usage*, *cpu usage*, dan *bandwidth* dari target server dan router yang terdaftar pada Prometheus lalu menampilkannya pada aplikasi.

Kata kunci: exporter, monitoring, API, prometheus, router, server



ABSTRACT

Server and router are important network components that is needed to be monitored and fixed if necessary. Prometheus is a monitoring application that can be used to monitor server and router condition. With API that is available within Prometheus, a monitoring application that can be customised based on user needs and have all Prometheus' advantages can be made. For Prometheus to be able to collect data, exporters need to be installed in each server. This monitoring application will pull data from Prometheus API, process it, and then display the data with table or graphic. This application can show data about memory usage, cpu usage, and bandwidth from servers and routers that was enlisted in Prometheus.

Keywords: exporter, monitoring, API, prometheus, router, server



DAFTAR ISI

LEMBAR PENGESAHAN	i
PERNYATAAN ORISINALITAS LAPORAN PENELITIAN	ii
PERNYATAAN PUBLIKASI LAPORAN PENELITIAN	iii
PRAKATA	iv
ABSTRAK	v
ABSTRACT	vi
DAFTAR ISI	vii
DAFTAR GAMBAR	xi
DAFTAR TABEL	xiii
DAFTAR NOTASI/ LAMBANG	xiv
DAFTAR SINGKATAN	xv
BAB 1 PENDAHULUAN	1
1.1 Latar Belakang	1
1.2 Rumusan Masalah	2
1.3 Tujuan Pembahasan	2
1.4 Ruang Lingkup	2
1.5 Sumber Data	2
1.6 Sistematika Penyajian	3
BAB 2 KAJIAN TEORI	4
2.1 Network Management System	4
2.2 Simple Network Management Protocol (SNMP)	4
2.3 OSI Model	5
2.4 Prometheus	7
2.4.1 Node Exporter	8

2.4.2 SNMP Exporter	8
2.4.3 Blackbox Exporter	8
2.5 CentOS	8
2.6 UML.....	9
2.6.1 Use Case.....	9
2.7 Linux OS	9
BAB 3 ANALISIS DAN RANCANGAN SISTEM.....	11
3.1 Topologi Jaringan.....	11
3.2 Use Case Diagram.....	12
3.2.1 Rancangan Use Case Diagram	12
3.2.2 Deskripsi Use Case Diagram	13
3.3 Activity Diagram.....	15
3.3.1 Activity Diagram Show Port/Exporter.....	15
3.3.2 Activity Diagram Show Server	17
3.3.3 Activity Diagram Change Password	18
3.3.4 Activity Diagram Manage User (Edit User)	20
3.3.5 Activity Diagram Manage User (Reset Password)	22
3.3.6 Activity Diagram Manage User (Delete User).....	23
3.3.7 Activity Diagram Create User.....	25
3.3.8 Activity Diagram Server Permission (Add Server)	26
3.3.9 Activity Diagram Server Permission (Remove Server)	28
3.4 Rancangan Antarmuka	30
3.4.1 Halaman Login.....	30
3.4.2 Gagal Login.....	30
3.4.3 Halaman Utama.....	31
3.4.4 Halaman Change Password.....	33

3.4.5 Halaman Manage User	34
3.4.6 Halaman Create User	35
3.4.7 Halaman Server Permission	36
3.4.8 Halaman Show Status Exporter/Port.....	37
3.5 Arsitektur Komunikasi dan Aplikasi Prometheus.....	38
BAB 4 IMPLEMENTASI.....	40
4.1 Tampilan Login.....	40
4.2 Tampilan Home.....	41
4.2.1 Tampilan Home Prometheus.....	42
4.2.2 Tampilan Home Server	43
4.2.3 Tampilan Home Router/Switch.....	44
4.3 Tampilan Menu Change Password	44
4.4 Halaman Manage User	46
4.4.1 Halaman Manage User (Edit).....	47
4.4.2 Halaman Manage User (Reset Password).....	47
4.4.3 Halaman Manage User (Delete).....	48
4.5 Monitoring Preparation	48
4.5.1 Prometheus.....	49
4.5.2 Node Exporter	50
4.5.3 SNMP Exporter.....	50
BAB 5 PENGUJIAN	52
5.1 Test Case	52
5.1.1 Fungsi Login	52
5.1.2 Fungsi Navigation Bar	53
5.1.3 Fungsi Monitoring Halaman Home	54
5.1.4 Fungsi Change Password	60

5.1.5 Fungsi Manage User	61
5.1.6 Fungsi Create User.....	62
5.2 Hasil Wawancara	63
BAB 6 SIMPULAN DAN SARAN.....	65
6.1 Simpulan	65
6.2 Saran.....	65
Daftar pustaka	66



DAFTAR GAMBAR

Gambar 2.1 OSI Layer [6]	7
Gambar 3.1 Topologi Jaringan FIT Maranatha.....	11
Gambar 3.2 Use Case Diagram	13
Gambar 3.3 Activity Diagram Show Port/ Exporter	16
Gambar 3.4 Activity Diagram Show Server/Router	17
Gambar 3.5 Activity Diagram Change Password	19
Gambar 3.6 Activity Diagram Edit User.....	21
Gambar 3.7 Activity Diagram Reset Password.....	22
Gambar 3.8 Activity Diagram Delete User.....	24
Gambar 3.9 Activity Diagram Create User.....	25
Gambar 3.10 Activity Diagram Add Server	27
Gambar 3.11 Activity Diagram Remove Server	29
Gambar 3.12 Halaman Login.....	30
Gambar 3.13 Gagal Login.....	31
Gambar 3.14 Halaman Utama.....	31
Gambar 3.15 Halaman Utama (Selected Icon)	32
Gambar 3.16 Halaman Detail Server	33
Gambar 3.17 Halaman Change Password.....	34
Gambar 3.18 Halaman Manage User	34
Gambar 3.19 Halaman Manage User (Edit).....	35
Gambar 3.20 Halaman Create User	36
Gambar 3.21 Halaman Server Permission	37
Gambar 3.22 Halaman Show Port/Exporter	37
Gambar 3.23 Arsitektur Prometheus.....	38
Gambar 4.1 Halaman Login.....	40
Gambar 4.2 Wrong Login	40
Gambar 4.3 Login Successful	41
Gambar 4.4 Halaman Home.....	41
Gambar 4.5 List Target	42
Gambar 4.6 Prometheus Monitoring.....	42

Gambar 4.7 Query Exporter UP.....	43
Gambar 4.8 Server Detail.....	43
Gambar 4.9 Query Server Status.....	44
Gambar 4.10 Tampilan Change Password.....	45
Gambar 4.11 Gagal Mengubah Kata Sandi.....	45
Gambar 4.12 Kata Sandi Berhasil Diubah.....	46
Gambar 4.13 Halaman Manage User.....	46
Gambar 4.14 Form Edit User.....	47
Gambar 4.15 Edit User Success.....	47
Gambar 4.16 Reset Password Success.....	48
Gambar 4.17 Delete User Success.....	48
Gambar 4.18 Prometheus Configuration.....	49
Gambar 4.19 SNMP Configuration Generator.....	51


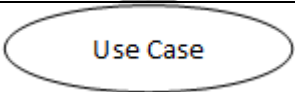










DAFTAR TABEL

Tabel 3.1 Modul Login	13
Tabel 3.2 Modul Melihat Status.....	14
Tabel 3.3 Modul Checking.....	14
Tabel 3.4 Modul Manage Server Permission.....	15
Tabel 3.5 Modul Manage User.....	15
Tabel 5.1 Pengujian Login	52
Tabel 5.2 Pengujian Navigation Bar	53
Tabel 5.3 Pengujian Fungsi Monitoring.....	55
Tabel 5.4 Pengujian Fungsi Change Password	60
Tabel 5.5 Pengujian Fungsi Manage User	61
Tabel 5.6 Pengujian Fungsi Create User.....	63
Tabel 5.7 Hasil Wawancara Sebelum Pembuatan Program.....	63
Tabel 5.8 Hasil Wawancara Setelah Pembuatan Program	64



DAFTAR NOTASI/ LAMBANG

Jenis	Notasi/ Lambang	Nama	Arti
Use Case		Aktor	Menggambarkan seseorang / sesuatu yang berinteraksi dengan sistem
Use Case		Use Case	Menggambarkan fungsionalitas/ pekerjaan tertentu dari sistem
Use Case		Asosiasi	Menghubungkan actor dengan use case
Topologi		Server	Menggambarkan server
Topologi		Router	Menggambarkan router
Topologi		Switch	Menggambarkan switch layer 2
Topologi		Switch	Menggambarkan switch layer 3
Topologi		Access Point	Menggambarkan Access Point
Topologi		ISP	Menggambarkan Internet Service Provider
Topologi		Koneksi	Menggambarkan koneksi yang menghubungkan jaringan.

Referensi:

Notasi/ Lambang Use Case dari The Unified Modeling Language Reference Manual [1]

DAFTAR SINGKATAN

CentOS	Community Enterprise Operating System
DNS	Domain Name System
FTP	File Transfer Protocol
GUI	Graphical User Interface
HTTP	Hypertext Transfer Protocol
IP	Internet Protocol
ISP	Internet Service Provider
MAC	Media Access Control
MRTG	Multi Router Traffic Grapher
NIC	Network Interface Card
NMS	Network Management System
OSI	Open System Interconnection
PHP	Hypertext Preprocessor
RDP	Remote Desktop Protocol
RHEL	Red Hat Enterprise Linux
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Management Protocol
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
UML	Unified Modeling Language

