MOBILE AD HOC NETWORK (MANET)

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SARJANA TERAPAN TEKNOLOGI REKAYASA INTERNET PENS

Silabus

1. Pengenalan materi + Instalasi ubuntu
2. Instalasi ns3
3. Point to point protocol di MANET
4. Implementasi WiFi dalam lingkungan MANET
5. Routing di MANET
6. Analisa QoS pada MANET
7. Mobility Model pada MANET
8. Mobility berbasis GUI dengan SUMO
9. Analisa Unjuk Kerja MANET dengan mobility
10-14. MANET dengan Jetbot AI
11-15. Project + Demo
16. Post Test

Penilaian

- Penilaian terdiri dari 3 bagian:

  Laporan:40%

  Project:30%

  Post Test:30%
- Toleransi Keterlambatan 10 menit
- Semua materi bisa di download di lecturer.

Tata Tertib

- Datang Tepat waktu – toleransi keterlambatan 10 menit dari pelajaran dimulai.
- Harus membawa buku petunjuk praktikum (hardcopy)
- Mengumpulkan Laporan Pendahuluan sebelum praktikum.
- Mengumpulkan Laporan Resmi.
- Pakaian rapi dan memakai jas lab.
- Ketidakhadiran harus ada ijin tertulis dan tidak boleh TA.
- Menjaga kebersihan dan kerapian Lab.
- Komputer harus dimatikan setelah kuliah berakhir.

Laporan Resmi

- Halaman Judul
- Tujuan
- Dasar Teori
- Peralatan
- Langkah-langkah percobaan
- Tugas Pendahuluan
- Analisa Data
- Kesimpulan
- Laporan Sementara
- Tugas laporan resmi

Laporan Pendahuluan

Referensi

- Mobile Ad-hoc Networking, stefano basagni, Marco Conti, Silvia Gordano, Ivan Stojmenovic, a John Wiley & Sons, Inc., Publication .
- Mobile Ad-Hoc Networks Applications, Edited by Xin Wang p. cm. ISBN 978-953-307-416-0.
- Laisa RPM, Rakhmadhany P, Achmad B, Pengaruh Model Mobilitas Node pada Protokol Routing AODV dalam MANET, Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer, Vol. 3, No. 1, Januari 2019, hal. 563-572
- https://www.nsnam.com/2020/11/flying-adhoc-network-simulation-fanet.html
- https://www.nsnam.org/doxygen/classns3_1_1_ns2_mobility_helper.html#aafed6f99e77c1fc74192da4d54e0eae7, mobility helper class
- https://www.nsnam.org/docs/release/3.30/models/singlehtml/index.html#document-mobility, ns-3 model library
- https://www.nsnam.org/docs/models/html/animation.html, animation netanim
- https://groups.google.com/g/ns-3-users/c/Z1UnbY_P7rc, mobility movements ns2 to ns3

Materi Praktikum

- Instalasi ns3
- Sistem komunikasi wireless di ns3
- Flat routing: DSDV, DSR, AODV, dll
- Hierarchical Routing: LEACH

Pengenalan ns3

- NS-3 is a new simulator, written from scratch
- Programming languages: C++, Python
- Manage: Mercurial

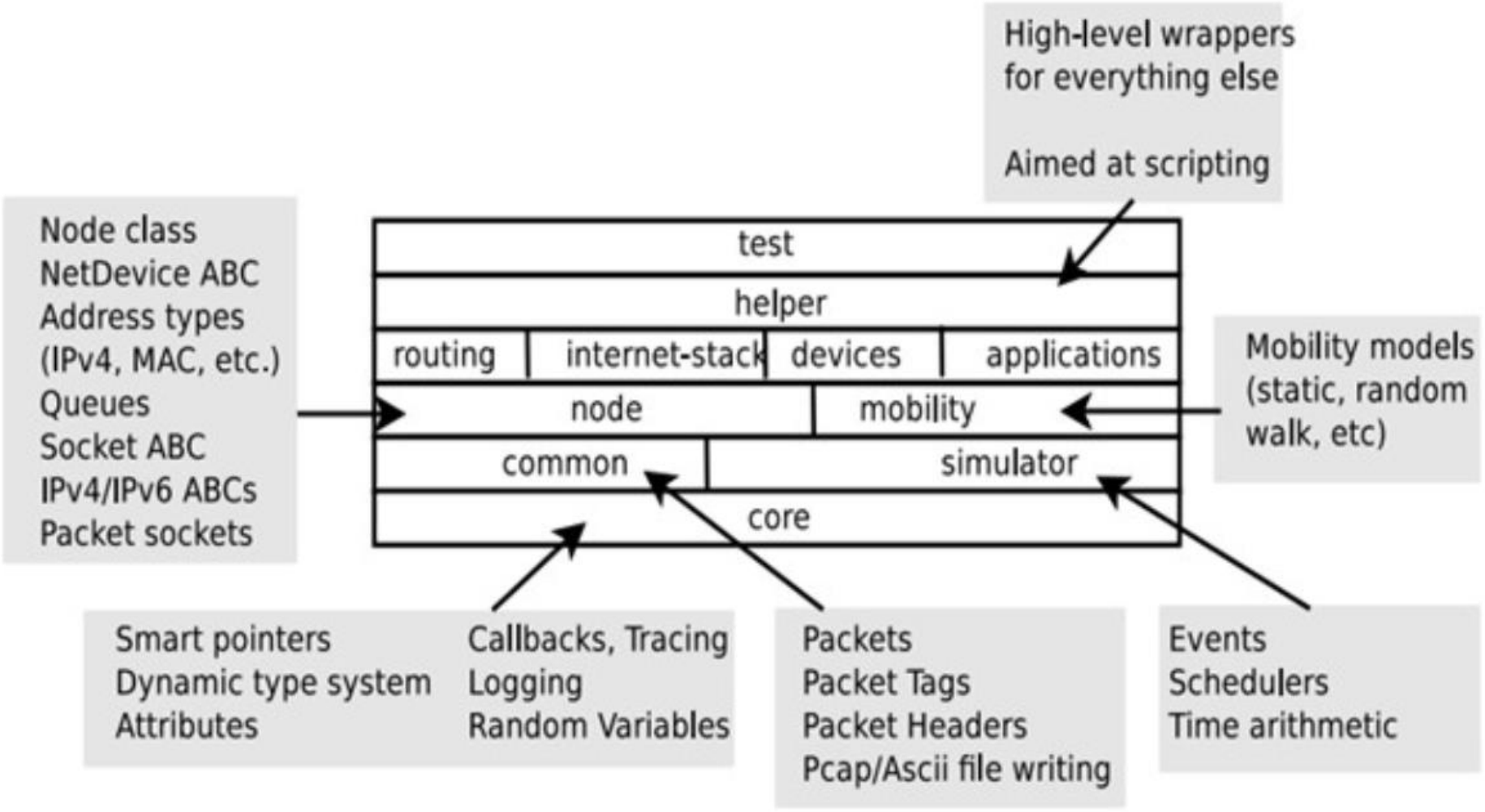
Perbandingan NS3 vs NS2 (1/2)

	Existing core ns-2 capability	Existing ns-3
Applications	ping, vat, telnet, FTP, multicast FTP, HTTP, probabilistic and trace-driven traffic generators, webcache	OnOffApplication, asynchronous sockets API, packet sockets
Transport layer	TCP (many variants), UDP, SCTP, XCP, TFRC, RAP, RTP Multicast: PGM, SRM, RLM, PLM	UDP, TCP
Network layer	Unicast: IP, MobileIP, generic dist. vector and link state, IPinIP, source routing, Nixvector Multicast: SRM, generic centralized MANET: AODV, DSR, DSDV, TORA, IMEP	Unicast: IPv4, global static routing Multicast: static routing MANET: OLSR

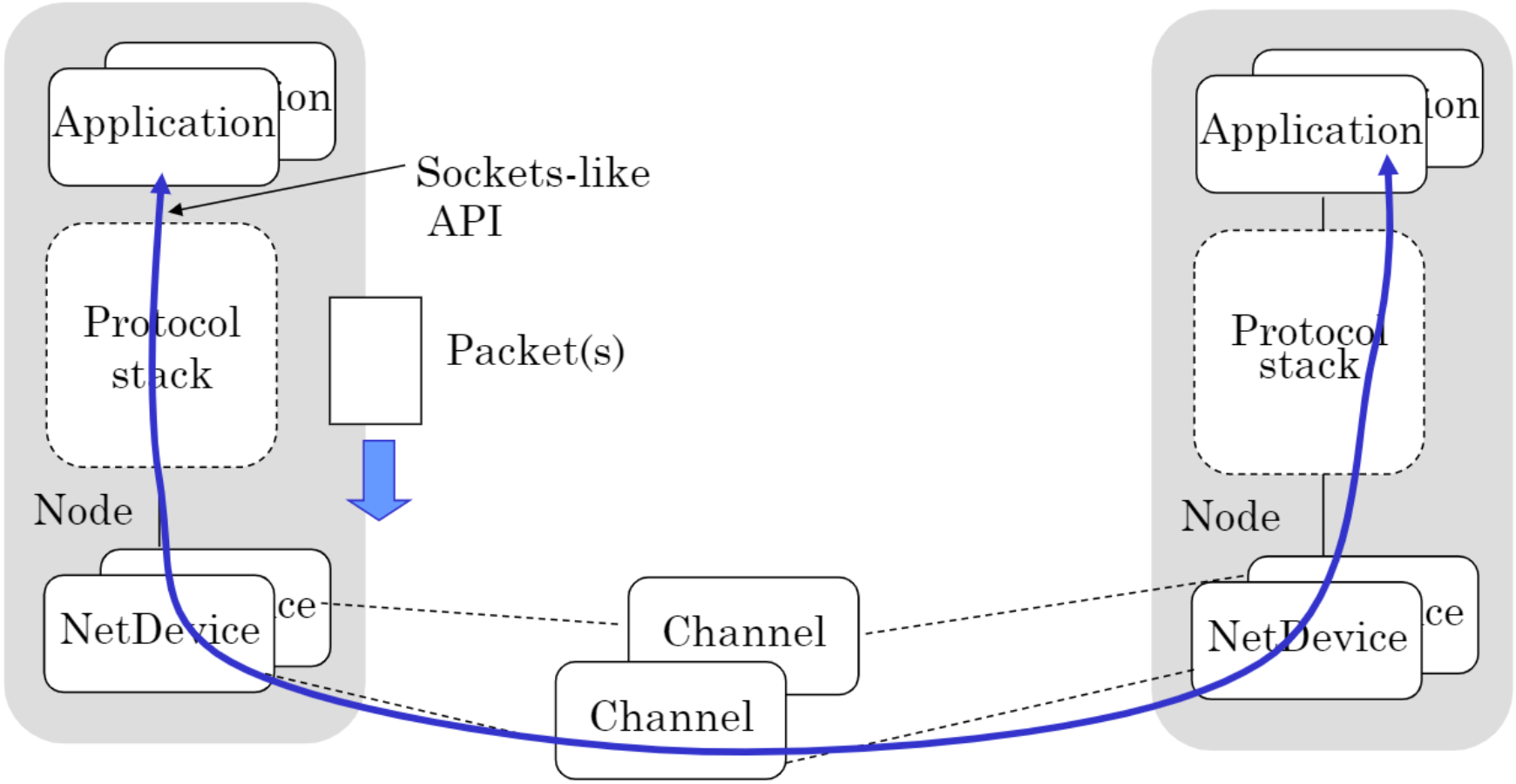
Perbandingan NS3 vs NS2 (2/2)

	Existing core ns-2 capability	Existing ns-3
Link layer	ARP, HDLC, GAF, MPLS, LDP, Diffserv Queueing: DropTail, RED, RIO, WFQ, SRR, Semantic Packet Queue, REM, Priority, VQ MACs: CSMA, 802.11b, 802.15.4 (WPAN), satellite Aloha	PointToPoint, CSMA, 802.11 MAC low and high and rate control algorithms
Physical layer	TwoWay, Shadowing, OmniAntennas, EnergyModel, Satellite Repeater	802.11a, Friis propagation loss model, log distance propagation loss model, basic wired (loss, delay)
Support	Random number generators, tracing, monitors, mathematical support, test suite, animation (nam), error models	Random number generators, tracing, unit tests, logging, callbacks, mobility visualizer, error models

NS-3 Modules


High-level wrappers
for everything else
Aimed at scripting
Node class
NetDevice ABC
Address types
(IPv4, MAC, etc.)
Queues
Socket ABC
IPv4/IPv6 ABCs
Packet sockets
test
helper
routing
internet-stack
devices
applications
node
mobility
common
simulator
core
Mobility models
(static, random
walk, etc)
Smart pointers
Dynamic type system
Attributes
Callbacks, Tracing
Logging
Random Variables
Packets
Packet Tags
Packet Headers
Pcap/Ascii file writing
Events
Schedulers
Time arithmetic

Basic Model


Application
Sockets-like
API
Protocol
stack
Packet(s)
Node
NetDevice
Channel
Channel
Application
Protocol
stack
Node
NetDevice