THE
INTERNET NEXT GENERATION
PROJECT

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PRESENTATION AT THE RWTH, AACHEN, GERMANY
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KEY FIGURES

START: 1-1-1999
DURATION: 4 YEARS

PARTNERS:
• CTIT
• TELEMATICS INSTITUTE - CENTRAL ORGANIZATION
  • ERICSSON BUSINESS MOBILE NETWORKS
  • ERICSSON TELECOMMUNICATIONS
  • KPN RESEARCH
• COSTS PER YEAR: 2 MEURO (CTIT: 1 MEURO)
PROJECT GOALS

• INCREASE DUTCH CONTRIBUTION TO THE INTERNATIONAL DEVELOPMENT OF NEW INTERNET TECHNOLOGIES
  • INTERNET-2, IETF, IRTF

• KNOWLEDGE CENTER WITHIN THE NETHERLANDS
  • WEB SITE(S), TUTORIALS, ONLINE TRAINING MATERIAL, ANTC & ETB
RESEARCH SUBJECT

• PROVISION OF QUALITY OF SERVICE IN THE INTERNET
  • IN CORE NETWORKS
  • IN ACCESS NETWORKS
  • INTRODUCE ACCOUNTING
  • IMPROVE MANAGEMENT ARCHITECTURE
PROJECT STRUCTURE

WU1
DISSEMINATION OF RESULTS AND ONLINE TRAINING

WU3
QoS IN CORE NETWORKS

WU4
QoS IN WIRELESS NETWORKS

WU2
INTERNET MANAGEMENT ARCHITECTURES

WU5
INTERNET ACCOUNTING
RELATION TO OTHER PROJECTS

- **GIGAPORT**
- **AMIDST**
- **FRIENDS**
- **GIGANET**
- **INTERNET NG**
- **QWING**

**IRTF**
Services mngt.
Network mngt.

**IETF**
Several groups

**INTERNET-2 QBONE**

**SURVEYOR**

**TF-TANT**
WU 1: DISSEMINATION

WEB SITE WITH INTERNET MANAGEMENT INFORMATION

TUTORIALS ON:
- IPv6
- SNMPv3
- DISTRIBUTED MANAGEMENT
- INTSERV AND DIFFSERV
- MOBILE NETWORKING

TRAINING MODULE ON INTERNET MANAGEMENT PROTOCOLS
WORK UNIT 2

NEW INTERNET MANAGEMENT ARCHITECTURES
WU2: NEW INTERNET MANAGEMENT ARCHITECTURES

31-10-1999: D2.1
HOW TO TRANSFER LARGE AMOUNTS OF MANAGEMENT DATA RELIABLY

31-12-1999: D2.2
INITIAL SERVICE MANAGEMENT ARCHITECTURE
**WU2 Approach**

**ACTIVITIES:**
- IRTF NETWORK MGT
- IRTF SERVICES MGT
  - IETF DISMAN
  - ...

**QUESTIONS:**
- WHAT ARE THE SHORTCOMINGS OF SNMP?
- HOW CAN DISMAN HELP?
- ...

**GOAL:**
- NEW INTERNET MNGT. ARCH.
SHORTCOMINGS OF SNMP

• LIMITED SCALABILITY
• NO SPECIAL MEANS FOR INTER-OPERATOR MANAGEMENT
  • DIFFICULT TO USE FOR END USERS (CNM)
  • ...

QUESTIONS

• WHAT ASPECTS OF EXISTING MANAGEMENT ARCHITECTURES MAY BE RELEVANT FOR THE FUTURE INTERNET MANAGEMENT ARCHITECTURE?
  • WILL SNMP REMAIN IMPORTANT?
  • CAN DISMAN HELP TO SOLVE THE SCALEABILITY PROBLEM? HOW?

• WHAT ARE THE MAIN PROBLEMS FOR INTER-OPERATOR MANAGEMENT
  • CAN WE USE TMN IDEAS TO SOLVE INTER-OPERATOR MANAGEMENT? HOW?

• IS SNMP A GOOD SOLUTION TO TRANSFER LARGE AMOUNTS OF MANAGEMENT DATA? WHY (NOT)?
  • CAN XML HELP TO TRANSFER LARGE AMOUNTS OF MANAGEMENT DATA?

• WHAT ARE THE MAIN PROBLEMS FOR CUSTOMER NETWORK MANAGEMENT?
ACTIVITIES

• DEFINE TERMINOLGY (E.G. ELEMENT, DEVICE, NETWORK, PROTOCOL, APPLICATION, SERVICE, CUSTOMER & BUSINESS MANAGEMENT)

• STUDY STATE OF THE ART (E.G. SNMPv3, DISMAN, TMN, ISO, OMG/CORBA, W3C/XML)
  • PARTICIPATE IN IRTF SERVICES MANAGEMENT GROUP
  • PARTICIPATE IN IRTF NETWORK MANAGEMENT GROUP
    • PARTICIPATE IN IETF DISMAN GROUP
  • EXPERIMENT WITH DISMAN IMPLEMENTATIONS
    • ...
WU3: QBone

Interdomain Testbed for Differentiated Services

• Goals:
  • Provide QoS for advanced applications
  • Engineering issues for Differentiated Services
  • Policy issues in interdomain differentiated services
  • Measure behaviour of traffic and networks

• Focus on Engineering
  • Get Expedited Forwarding running
  • Support measurement and evaluation
  • Focus on interoperating domains
  • Get prototype bandwidth brokers running
QBone

Consortium Members

• iCAIR (Northwestern University)
• IBM
• APAN/TransPAC (IU)
• Asia/Pacific Advanced Network (Japan)
• Kokusai Denshin Denwa Japan
• Korea Telecom
• Singapore National University

• SURFnet b.v.
• CTIT
• MREN (Chicago)
• Nanyang Technical University
• STAR-TAP
• Electronic Visualization Lab/UIC
• SingAREN
QBONE - TESTBED

Initial QBone Participants and Connectivity*

* Actual connectivity and participant group will vary as deployment progresses

11 February, 1999
WU4: QoS OVER WIRELESS AND MOBILE ACCESS NETWORKS

• A FRAMEWORK FOR QoS SUPPORT FOR IP NETWORKS WITH WIRELESS AND MOBILE ACCESS NETWORKS

• A DESCRIPTION OF QoS SUPPORT BY WIRELESS NETWORKS

• A DESCRIPTION OF MOBILITY SUPPORT IN WIRELESS NETWORKS

• A DESCRIPTION OF RESOURCE RESERVATION AND ROUTING ALGORITHMS IN IP NETWORKS WITH MOBILITY

  • WIRELESS TESTBED IN ANTC

  • WIRELESS TESTBED AT ERICSSON
Key Issues

- Extension of Integrated Services and Differentiated Services Frameworks with the notion of QoS and mobility in wireless networks
- The use of mechanisms and protocols (e.g., RSVP) for service differentiation over wireless link layers
  - The support of various wireless networks for QoS requirements and ability to differentiate between QoS classes
- Location management and handover algorithms to support real-time IP services in wireless networks
- Combined resource reservation and routing for high network efficiency, QoS support, and mobility support
WU5: Internet Accounting

D5.1: STATE OF THE ART REPORT ON ACCOUNTING

D5.2: INITIAL INTERNET ACCOUNTING ARCHITECTURE

D 5.3: REPORT ON POSSIBLE TECHNIQUES FOR METERING
WHAT IS ACCOUNTING?

- billing
- charging
- metering
- network

- sending & collecting bills
- information collection correlating
- measurements
QUESTIONS - TRANSPORT

• Can you make a difference between local, national and international traffic
• Can you distinguish inter and intra traffic
  • Can you do accounting when e.g. retransmissions are involved
• What information is needed for accounting
• What is the influence of future developments
  • ...
QUESTIONS - GENERAL

• What’s the difference between accounting in the ‘old’ and ‘new’ world

• who are involved in the accounting process and how will it be ‘organized’

• what accounting information needs to be exchanged between ISPs/operators
  • At what level(s) is accounting possible/needed (user or aggregates)
    • ...
ACTIVITIES

- State-of-the-art standards (IETF, TINA, IRTF)
- State-of-the-art research (publications, conferences)
- Interviews Internet Service Providers
- Accounting parameters used by ISPs.
- Influence of politics and regulations.
- Accounting lab, prototypes and experiments.
- Insight in Traffic Flows.
- Study new technologies and equipment (e.g. Mobility, DIFFSERV, INTSERV).
- Homepage.