Deployment Support Network Server

Thomas Kalt

Tutors: Jan Beutel, Matthias Dyer

Professor: Dr. Lothar Thiele

Computer Engineering and Networks Lab, ETH Zurich
Overview

- Introduction Deployment Support Network
- Implementation DSN Server
- Transport Performance Tests
Introduction: Deployment Support Network
Introduction: Deployment Support Network

Requirements:
- Smart use of Bottleneck
- Multiuser capable
- Data logging
Implementation DSN Server
Implementation: DSN-Server Overview

DSN - Server
- SQL-Module
- Command Thread
- Parser
- XMLRPC

RX.Tx-Module

DSN - Node
- Process

DSN - Layer
- DB

Target - Layer
- GUI
- AT
- ...GUI

GUI’s & Analysis Tools
Implementation: Logging Modes

- Push / Pull
- Retransmission

Node 1
Last MsgID: 33

Node 2
Last MsgID: 35

Received List: 30 X 32 X X 35
Request List: 31 33 34
Implementation: DSN Tool
Implementation: DSN Tool
Transport Performance Tests
Transport Performance: DSN Node

- Performance Bottleneck:
  - Single Sink
  - Tree Topology

- Log Generating Modes on the DSN Node
Logging Performance Tests

Log Stream

Push
MD & PO

Pull
MatLab Simulation

No improvement with retransmission

No improvement with retransmission

Log Burst

Push
Same behaviour like Log Stream without retransmission

Pull

Estimation

No tests available

Graphs showing the performance tests:
- Log Burst: Push and Pull with and without retransmission, showing the same behaviour like Log Stream without retransmission.

Legend:
- MD & PO
- MatLab Simulation
- Test
- No tests available
Logging Performance Tests

Log Stream

- **Push**
  - MD & PO
  - No improvement with retransmission

- **Pull**
  - MatLab Simulation
  - No improvement with retransmission

Log Burst

- **Push**
  - Same behaviour like Log Stream without retransmission

- **Pull**
  - Estimation
  - No tests available

---


Thomas Kalt
Log Stream Pull without Retransmission

Number Logs

Node 3

Node 2

Node 1

k = Number of nodes
l = Logs generating rate
r = Logs sending rate
\( \text{\textbackslash} = l - r \)
D = Delay
T = Time for one cycle
Log Stream Pull without Retransmission

Measurement Data:
- $r = 13$ logs/s
- $d = 1$ s

conclusion:
- $l = 0.5$ logs/s → 25 Nodes
- $l = 1.0$ logs/s → 12 Nodes
- $l = 1.5$ logs/s → 8 Nodes
- $l = 2.0$ logs/s → 6 Nodes
Summery Logging Performance

Log Stream

- Push without RT (Measurement)
- Pull without RT r = 13 logs/sec (Estimation)
- Pull without RT r = 30 logs/sec (Estimation)

Log Burst

- Push with RT (Measurement)
- Pull without RT r = 13 logs/sec (Estimation)
- Pull without RT r = 30 logs/sec (Estimation)
Contribution

- DSN Server
  - Secure multiuser access
  - Simple interface for target specific tools
  - Database logging
  - Intelligent queuing of commands (access bottleneck)
- Web based control interface
- Estimation and tests of the logging performance
Thank you for your attention.

Do you have any question?