MANAGEMENT OF THE WORLD-WIDE WEB

RESULTS OF THE CEO PROJECT

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BACKGROUND

JOINT RESEARCH CENTRE (JRC)
• EUROPEAN COMMISSION
• ISPRA - ITALY

CENTRE FOR EARTH OBSERVATION (CEO)

PROVIDERS OF EARTH OBSERVATION DATA

 USERS OF EARTH OBSERVATION DATA
BACKGROUND
PROOF OF CONCEPT

WWW MANAGEMENT:
• DESIGN AND DEMONSTRATION
• FIRST PROJECT IN A SERIE

PARTNERS:
• ESYS LTD. - GUILDFORD, UK
  • CTIT - UT, NL
  • 9 MONTHS

WORK DIVISION:
• ARCHITECTURE: ESYS & CTIT
  • MANAGER: ESYS
  • AGENT: CTIT
APPROACH

WWW server
Document transfer service
WWW client

Internet

TCP
HTTP
HTML documents

TCP
HTTP

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HTML documents

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APPROACH

WWW server

S-MIB

S-MIB

S-MIB
APPROACH

Manager

Special Application

A-MIB

A-MIB

A-MIB

A-MIB

A-MIB

A-MIB

A-MIB

A-MIB
APPREACH

Document transfer service
S-MIB

GENERAL  ACCESS  DOCUMENT  ERROR
# S-MIB

## General Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Contact</th>
<th>Supported Mediatypes</th>
<th>Application Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>Last Initialization</td>
<td></td>
<td>Topic Table</td>
</tr>
</tbody>
</table>
S-MIB

ACCESS INFORMATION

NUMBER OF ACCESSES
NUMBER OF BYTES IN
NUMBER OF BYTES OUT
DOMAINS
PREVIOUS DAYS
MOST FREQUENT USERS
MOST RECENT USERS
A-MIB

client side

request

'HTTP service'

indication

server side

response

confirm

A-MIB

A-MIB
A-MIB

SERVICE STATISTICS

"SERVICE PRIMITIVE" COUNTERS

QoS

DELAY THROUGHPUT TABLE

TIME OUTS
HTTP-MIB

httpMIB

httpSystem
- entityTable

httpStatistics
- summaryTable
- requestTable
- responseTable

httpTimeOuts
- timeOutTable
OTHER-MIBS

WWW-SERVER SYSTEM

- S-MIB
- HTTP-MIB
- MIB-II
- LINK
AGENT IMPLEMENTATION

WWW-SERVER SYSTEM

SERVER PROCES
- HTML FILES
- HTTP

UNIX KERNEL
- TCP
- IP
- LINK

LOG FILES

SYSTEM CALLS

SUBAGENT
- S
- A
- HTTP
- MIB-II
- LINK

MASTER AGENT

SNMP

MANAGER SYSTEM
SUBAGENT IMPLEMENTATION

ACCESS LOGFILE

ERROR LOGFILE

TAIL

SCAN ACCESS LINE

SCAN ERROR LINE

COMPUTATION

S

A

HTTP

LOG INFO

LOG INFO BY LINES

LOG INFO BY ELEMENTS
## LOGFILES VERSUS IPC

<table>
<thead>
<tr>
<th>METHOD</th>
<th>ADVANTAGE</th>
<th>DISADVANTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPC APPROACH</td>
<td>• COMPLETE CONTROL OVER SERVER</td>
<td>• SERVER SOFTWARE NEED TO BE MODIFIED</td>
</tr>
<tr>
<td></td>
<td>(SET OPERATIONS ARE POSSIBLE)</td>
<td></td>
</tr>
<tr>
<td>LOGFILE APPROACH</td>
<td>• NO NEED TO MODIFY SERVER SOFTWARE</td>
<td>• SERVER CAN ONLY BE MONITORED</td>
</tr>
<tr>
<td></td>
<td>• CAN BE USED WITH DIFFERENT SERVERS</td>
<td>(SET OPERATIONS ARE NOT POSSIBLE)</td>
</tr>
</tbody>
</table>
RESULTS

• AGENT HAS BEEN DEMONSTRATED SUCCESSFULLY

• FIRST SNMP BASED WWW-MANAGEMENT SYSTEM IN THE WORLD

• STANDARDIZATION WITHIN IETF

• PROTOTYPES AVAILABLE