A visualization tool for geographic information of NTP servers

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Outline

1. Domain Description
2. The Solution
3. Software Demo
4. Conclusion

Domain Description

- NTP - Network Time Protocol
- Self-organized network
- Frequent exchange of messages

NTP Survey

- NTP survey in 2005
- Data query, collection and analysis
- http://www.ntpsurvey.arauc.br
- 1,290,819 unique addresses found
- 147,251 complete responses

Tasks

- Overall visualization of the geographic topology
- Deficient NTP servers identification
- Geographic topology and deficient NTP servers identification in a specific geographic region
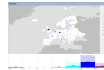

Main Window

- Map of the region in focus
- Rectangle for each subregion
  - Colour: delay
  - Size: # servers
- Bottom: Histogram
  - Colour and X-axis: delay
  - Y-axis: # servers
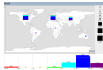
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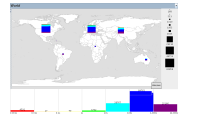 - Colour and X-axis: delay
  - Y-axis: # servers

Implementation Approach

- Java2D, Swing
- Maps using GIS boundary information
- Location using GeoLiteCity data
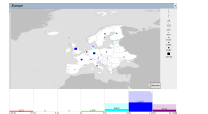 - Location information previously obtained for each server
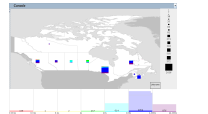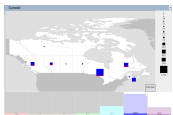

Software Demo

- Demo
- Scenario of Use

Screenshots

Screenshots

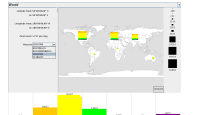## Screenshots

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Screenshots

Screenshots

Conclusion

- Visualization tool for geographic visualization of NTP servers
- Search for good or deficient servers in a region

Future Work

- Performance improvement (reduce latency and usage of CPU)
- Multiple filtering
- Detailed view of servers
- Filter by IP address

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