IPRO 312
Widgets to Enhance the Tru2way Consumer Experience

ILLINOIS INSTITUTE OF TECHNOLOGY

PROBLEM STATEMENT

▷ Comcast needs performance and resource data for use with the Tru2Way Platform they intend to deploy on their network to ensure reliable and consistent user experience across multiple hardware platforms.

OBJECTIVE

▷ Primary Goals

- Developing widgets
- Identify metrics that affect performance

e.g., Bandwidth and memory usage

▷ Secondary Goal

- Ideas for widget applications

e.g., Facebook, Twitter, Weather, Mail Tracker

TEAM STRUCTURE

TECHNICAL TEAM

▷ Support for development on the Tru2way Platform and widget application was sourced from various internet sites in addition to sample documentation from the Vision Workbench

TESTING TEAM

▷ Testing the widget application developed by Technical Team to identify and collect metrics data by using the Vision Workbench Emulator in various test scenarios

METHODOLOGY

▷ Programming and Development

- Assembled teams to independently develop and test varying aspects of the environment and widget applications
- Used two week iterative development cycles which included requirements gathering, coding, testing and analysis
- Carried out development using a reference implementation from Cablelabs which later moved to a trial software development kit, Vision Workbench

▷ Testing

- Testing as a client of popular micro-blogging site, "Twitter"
- Scenario based testing was performed to collect usage data using the following test case scenarios:

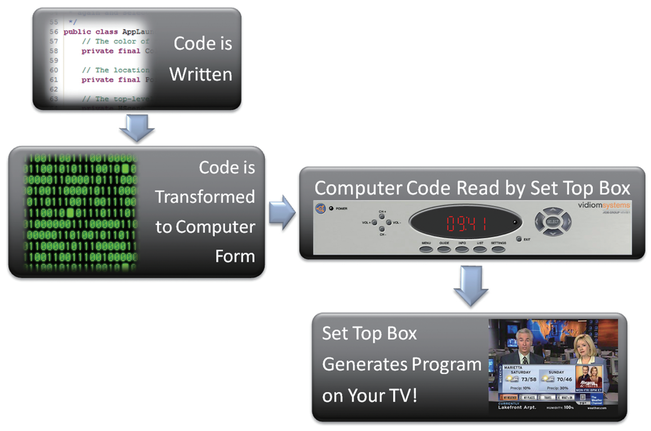
1. Single running widget application, various datasets (10,20,40,80 tweets... until the program breaks)
   Used to test the memory & bandwidth use, file size processing ability, and robustness of widget application. Data volume was systematically increased until reference emulator failed.

2. Concurrent running widget applications, fixed size dataset (tweets)
   Used specifically to test memory usage and CPU latency multi-tasking scenario

3. Concurrent running widget applications, varying size datasets (tweets)
   Used a stress/robustness test for widget platform and emulator. This was a merge of tests 2 & 3

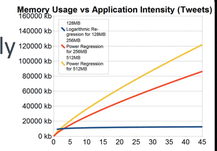
▷ Platform modifications, compromises during testing

- Changed memory allocation to support test case scenarios
- Maintained consistency of testing variables to generate and retrieve data from a private server

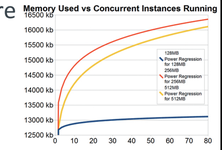


RESULTS

▷ Increase in memory of widget application's consumption nearly propotional to the intensity of tasks given

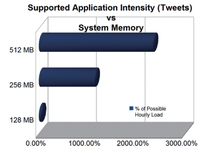


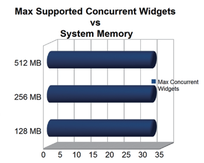
▷ Better performance results were obtained in environments in which more memory was allocated



▷ Real-world context: limit of 150 tweets/hour ruled for benchmark

- 128MB Memory Set only sustained approx. 33% of application's potential
- 256MB & 512MB Memory Set performed 10 and 25 times better than the above
- Therefore, minimum of 256MB memory installed required for new systems





▷ Possible to run over 30 widget applications concurrently

FUTURE WORK

▷ Continue development of additional applications

▷ Increase application complexity

▷ Test metrics identified by IPRO312

▷ Identify additional metrics, if necessary