

# BZFlags

Overview

Architecture

Projects

# Overview

- 3D first person shooter
- Multiplayer
- Portable
- Client-Server

# Architecture

- Clients and Server maintain “world”
  - Clients send updates to server, which validates and notifies clients of changes
- Clients -----> Server
  - Join, Exit, Query game, players
  - Capture, Drop, Grab, Transfer flag
  - Updates, Shots fired
- Server -----> Clients
  - Add/Remove Player, Kick, Resources
  - Kills, Updates, Shots, Flag Updates, Scores

# Project – Network Monitoring

- Server calculates message lag, jitter, loss (LagInfo.cxx)
  - Kicks clients with poor connections
- Improve measurement techniques
  - Other metrics
- Alternative policies
  - Currently comparison against a threshold value
- Can clients manage this among themselves?

# Project – Scalability

- Assume trusting clients
  - Peer-to-peer vs. client-server
- Some/all functionality of server may be performed by clients
  - Quorum/consensus protocols to agree on events
- Improve server scalability
  - Lower load, lower traffic

# Project – Group Communication

- Optimizations to group communication
- Other group communication protocols
  - Publish-subscribe (ECho)
  - Spread toolkit
    - fault resilient high performance messaging
- Improvements in performance?

# Project – Offloading

- Extra servers to perform other functionality
  - Physics: Tank updates, Collision detection, Environment
  - Gameplay: Dead reckoning, Voting arbitration
- Speedups?