A Long-term Study of a Popular MMORPG

Wu-chang Feng      Debanjan Saha      David Brandt

Imagine yourself

➤ In charge of running a successful MMORPG
➤ Your goal
  ➤ Make money
  ➤ 100k+ people paying you $20 a month to play
Questions

- How many players will there be next week?
  - Provision servers to support them
- What can I do to increase this number?
  - Impact of game updates and promotions
- What can I do to make sure players don’t quit?
  - Detecting disinterested players

Difficult questions to answer

- Requires player data from a successful MMORPGs over a long time period (fat chance!)
- Never hurts to ask…
  - Remember NetGames 2004?
  - David Brandt, CCP Games
EVE Online

- Single world sci-fi MMORPG

EVE Online statistics

- Launched in UK and USA on May 6, 2003
  - Europe on May 23, 2003
  - China on June 12, 2006
- As of August 3, 2007
  - 190,000 active subscriptions
  - 35,000+ peak concurrent on-line players
- How does it stack up against other MMOs?
EVE Online trace

- Anonymized authentication log of EVE Online throughout its existence
  - All session-related events for each player

<table>
<thead>
<tr>
<th>Duration</th>
<th>May 6, 2003 – March 12, 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sessions</td>
<td>67,060,901</td>
</tr>
<tr>
<td>Total unique players</td>
<td>925,928</td>
</tr>
<tr>
<td>Total player time</td>
<td>17,204 years</td>
</tr>
</tbody>
</table>
Questions

- How many players will there be next week?
  - Provision servers to support them
- What can I do to increase this number?
  - Impact of game updates and promotions
- What can I do to make sure players don’t quit?
  - Detecting disinterested players

Previous study

- Gamespy
  - 550 games (mostly FPS)
  - Nov 2002-Jan 2005
  - 337.8k player years
Game workloads

- Periodic
  - Strong daily peaks with weaker weekend peaks

Game workloads

- Predictable over short-term
  - Workload fluctuations small from week-to-week

Questions

- How many players will there be next week?
  - Provision servers to support them
- What can I do to increase this number?
  - Impact of game updates and promotions
- What can I do to make sure players don’t quit?
  - Detecting disinterested players

EVE Online growth

- Active player population throughout trace
Mechanisms for increasing population

- New game content and updates
- Promotions and marketing
- Price reduction

Impact of game updates

- Gain in players after each game update in trace
  - Large gains after initial release
  - Modest gains after subsequent game updates
- Castor spikes
  - Competing sci-fi MMORPG shuttered
  - Marketing blitz during game conference (free accounts)
Questions

- How many players will there be next week?
  - Provision servers to support them
- What can I do to increase this number?
  - Impact of game updates and promotions
- What can I do to make sure players don’t quit?
  - Detecting disinterested players

Player churn

- A fact of MMORPG life
  - MMORPGs notorious for low acquisition rates
  - EVE Online player acquisition rate drops over time
- Potential reasons
  - New players at a disadvantage
  - Hard-core player population “tapped” out

![Graph showing player churn over time](image-url)
Acquiring new players is hard

Let’s keep the ones we have instead!

Can we measure disinterest?

- Examining play history to detect waning interest
  - Minutes played per week
  - Session length statistics
  - Inter-session time statistics
Metric #1: Minutes played per week

- Minutes played per week throughout play history
  - Players play less over time

![Graph showing the distribution of minutes played per week](image)


Metric #2: Session times

- Session time distribution
  - Session length of “final” session shorter than normal

![Graph showing the distribution of session times](image)

Metric #3: Intersession times

- Intersession time distribution
  - “Final” intersession time significantly longer than normal

![Probability Density Function (PDF) and Cumulative Distribution Function (CDF) of intersession times over days.]

Catching a disinterested player

- Aggregate not individual statistics
  - Addicts thrown in with casual gamers
  - Normalize per-player
- What percentile does final session and final inter-session times fall into versus player’s prior times?
  - “Final” intersession time a very good predictor!

![Cumulative Distribution Function (CDF) of intersession times over player percentages.]

Conclusion

- A close look at a popular MMORPG over a long period of time

- Key observations
  - Workload stability
  - Player acquisition and churn
  - Measuring disinterest

Questions?
Extra slides

Game workloads

- Unpredictable over long-term
Impact of game updates

- Player minutes per week as a function of last game update

![Graph showing player minutes per week as a function of last game update.](image1)

Player sessions

- Many play for a short time

![Graph showing PDF of additional sessions per player.](image2)