How to Fine-tune Mobile Apps for Optimal Performance

Ajitpal Raina
Senior Product Manager
MicroStrategy
This presentation may include statements that constitute “forward-looking statements” for purposes of the safe harbor provisions under the Private Securities Litigation Reform Act of 1995, including descriptions of technology and product features that are under development and estimates of future business prospects. Forward-looking statements inherently involve risks and uncertainties that could cause actual results of MicroStrategy Incorporated and its subsidiaries (collectively, the “Company”) to differ materially from the forward-looking statements.

Factors that could contribute to such differences include: the Company’s ability to meet product development goals while aligning costs with anticipated revenues; the Company’s ability to develop, market and deliver on a timely and cost-effective basis new or enhanced offerings that respond to technological change or new customer requirements; the extent and timing of market acceptance of the Company’s new offerings; continued acceptance of the Company’s other products in the marketplace; the timing of significant orders; competitive factors; general economic conditions; and other risks detailed in the Company’s Form 10-K for the year ended December 31, 2016 and other periodic reports filed with the Securities and Exchange Commission. By making these forward-looking statements, the Company undertakes no obligation to update these statements for revisions or changes after the date of this presentation.
Mobile Performance?
MicroStrategy Architecture: The Big Picture

A Unified Platform for Enterprise Analytics, Mobility, and Security

Analytics applications that blend data from databases and big data and deliver insights to users via reports, dashboards, and apps.

Mobility applications that source information from multiple locations and submit transactions to your ERPs systems.

Security applications that secure your most sensitive information and resources with digital security badges.

For Analytics and Mobility applications

For Custom applications

For Security applications

Services
- Reporting
- Data
- Analytical
- Transactional
- Distribution
- Alerting
- Security
- Physical Access
- Telemetry
- Logical Access
- Localization

Enterprise
- Cloud

Tools
- Data
- Modeling
- Analytical
- Reporting
- Visualization
- Application
- Testing
- User Administration
- Deployment
- Automation
- Monitoring
- Installation
- Translation

Enterprise Assets
- RDMS
- OLAP
- Big data
- Local files
- Cloud data
- Enterprise BI
- DPA
- Cloud apps
- Statistical
- Charting
- Mapping
- Metrics
- VPN
- Directories
- PACS
- MDM

Metadata Repository

Application
- Projects
- Wallets
- Custom

Document
- Report
- Grid
- Map
- Chart
- Visualization
- Dashboard
- Badge
- Form
- Filter

Components
- Metrics
- Sets
- Groups
- Templates
- Cubes
- Consolidations
- Styles

Model
- Attributes
- Hierarchies
- Users
The MicroStrategy Mobile Workflow
It is important to pay attention to performance at each layer in the workflow.
Mobile First Design
Design your App for mobile use cases
Design a truly ‘Mobile’ dashboard
Have clear and focused content

- Mobile means limited real estate – Good mobile design is often related to better mobile performance.
- Do not overcrowd your screen with data and visualizations.
- There’s a premium on device rendering performance.
- Spread data and visualizations over multiple panels and layouts.
- Improve “perceived” performance.
Consider creating linked dashboards
Improve perceived performance significantly

• Start off with a single, simple landing page.

• Provide links to relevant dashboards from there.

• Customize the workflow as per audience - each dashboard for a particular audience or function.

• Most importantly, linked dashboards can be cached, further improving performance.
Manage the amount of data appropriately
Data only as much, as needed

• Limit on screen data as per necessity.

• You can always drill into more details later.

• Customize the workflow as per audience.

• Filter vs Slicing selectors.

• Cubes vs Warehouse execution.

• Images matter a lot!
Caches

Devise the best caching strategies for your situation
The MicroStrategy Mobile Workflow

It is important to pay attention to performance at each layer in the workflow.
Enable caching at various levels
Single most important factor in improving mobile performance

• Caching optimizes performance.

• Available at various levels
  • DB Connection Caches
  • Object Caches
  • Element Caches
  • Result Caches
  • Report Caches
  • Document Caches
  • Device Caches

• Device caches are key to Mobile performance.
Enable caching at various levels

Key points to remember

• Caching needs to be turned on at all levels.
  o Document cache
  o Report cache
  o Component level dataset caches

• Correct type of cache needs to be available for Mobile.

• Adequate memory should be available to store caches.
  o Server side
  o Client side

• ‘Clear on Close’ setting at device level should be turned off.

• Cache maintenance policies should be in place, to clean older versions and replace them.

• Cache expiration settings should set appropriately.

• Dirty/Invalid caches need to be taken care of as needed.
Device Caches
Relevant Settings
Device Caches

Relevant Settings
Cache Preloading
Subscriptions and Precaching
The MicroStrategy Mobile Workflow

Cache preloading scenarios
Preload Caches Whenever Possible
Bulk preloading improves performance

• Preload caches to have them ready as and when you need them

• Caches can be preloaded in 2 ways:
  • Subscriptions
  • Pre-Caching

• Background refresh feature makes preloading even more powerful
Mobile Subscriptions
Mobile Subscriptions
Subscriptions

Key points to remember

• Subscription caches are different from regular/live caches.

• For optimal performance, subscriptions should be ready in history list inbox already.

• Cache maintenance policies should be in place, to clean older versions and replace them.

• Size and number of downloads should be appropriate.

• Network should be good while downloading the subscriptions.

• Refer product documentation for further details.
Preloading caches during live executions
Preloading caches during live execution

Key points to remember

• Pre-Caching caches are the same as regular/live mobile caches.

• For optimal performance, caches should be ready on the server already.

• Cache update subscriptions should be used, to clean older versions and replace them.

• Size and number of downloads should be appropriate.

• Network should be good while downloading the caches.

• Refer product documentation for further details.
Other key factors

Hardware, Network and EMM
Invest in Your Mobile Hardware
The more powerful, the better

• Latest hardware usually the best performing,

• Better RAM, better CPU, better GPU etc., all translate to better performance.

• Always invest in the best hardware your budget can afford.
Invest in Your Mobile Hardware
The more powerful, the better

• Latest hardware usually the best performing,

• Better RAM, better CPU, better GPU etc., all translate to better performance.

• Always invest in the best hardware your budget can afford.

Invest in Your Mobile Network
The faster the network, the better

• Mobile networks are the last key piece to the performance puzzle.

• Always go for the best network possible
  • Wifi
  • LTE
  • 4G/3G

• Higher bandwidth, lower latency and lower packet loss are preferred.

• Where network is patchy, leverage device caches to the best of your ability.

• VPN and MDM/EMM solutions may add additional overheads.
Mobile logs and statistics
Quantify your performance
Enterprise Manager
Governing and tuning your MicroStrategy system

• Tool providing reports and dashboards with statistical data on usage

• These reports can help you do the following
  o Allocate system resources according to data warehouse usage
  o Research efficient aggregation, partitioning and indexing strategies
  o Determine optimal time run scheduled jobs, load data or perform system maintenance
  o Determine most popular reports, so you can schedule and cache them
  o Identify unused objects from your metadata repository so they can be deleted
  o Identify peak usage times and patterns, to help tune Intelligence server appropriately
  o Determine if you need more database connection threads, if queue times are long
  o Profile users by their system resource usage
    … etc

• Mobile Statistics
Mobile Statistics
Mobile Statistics
Mobile Device Logs
Thank You

Ajitpal Raina
araina@microstrategy.com