

ADI01: Best Practices in Notes & Domino R5 Application Development

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Agenda

- Measuring Efficiency
- Selecting a Programming Language
- Improving @Db formula Performance
- Improving Web App Performance
- Tips for Using Images
- New R5 ODS & Design Features
- Improving Usability
- On Line Developer Resources

Measuring Efficiency

- **What makes a good program?**
 - **Correctness**
 - **Ease of use**
 - **Speed**
 - ▶ **CPU vs. Observed**
 - **Maintainability**
- **How do you measure these?**

Measuring Efficiency

- **Only compare results obtained:**
 - **In the same environment**
 - **With the network disabled**
 - **With no other users logged in**
 - **With identical loads (as much as possible)**
 - **With minimal paging**
- **Clock Precision: Two digits**

Selecting a Programming Language: @formula

- Prototyping applications
- Manipulating the currently selected object
- Simple formulas
- Where LotusScript & JavaScript are unavailable
- @formulas out perform LotusScript when:
 - Updating many documents in a database
 - Writing simple routines

Selecting a Programming Language: LotusScript

- **Formulas that use many documents or databases**
- **The task requires iteration, branching, looping or complex logic**
- **Controlling workflow process on a form**
- **Scripting Notes client UI**
- **Better than JavaScript for Notes clients**
- **LotusScript out performs @formulas when:**
 - **Updating a few documents in a database**
 - **Updating many fields via a lookup**

Selecting a Programming Language: JavaScript

- Useful for current note events
- Put most of your code into the JS Header
- Put JavaScript code on subform to have multiple forms reference same code
- Use for field input validation at client
- Scripting the browser's UI
- JavaScript support for R5 client
- Better than LotusScript for web clients

Selecting a Programming Language: Java

- **Comparable in terms of performance & functionality to LotusScript**
- **Rich class library**
- **No access to front end classes**
- **Use Java for application that:**
 - **Need to be multithreaded**
 - **Will stand alone outside the Notes environment**

Improving @Db formula Performance

- **Use column number rather than field name**
- **Reduce number of lookups by creating one column with all the lookup data**
- **Use "Caching" whenever possible**
- **Do lookups against hidden views with a minimum amount of data**
- **Minimize the size of the view index**
 - Reduce the number of documents in a view
 - Don't show documents in multiple categories
 - Remove all unnecessary view columns

Improving Web Application Performance

- **Use Anonymous or Default access on busy databases**
- **Avoid using @functions on busy pages**
- **Enable caching of dynamic pages and formulas**
 - **NOTES.INI: DominoAnalyzeFormulas=1**
- **Avoid document creation in busy databases**
- **Use SSL only when necessary**
 - **For best performance, use the smallest keys**
 - **For best security, use the largest keys**

Improving Web Performance - Forms

- **Don't start field names with "HTTP_"**
- **Minimize number of computed fields**
- **Use single-use fields**
- **Simplify formulas**
- **Keep graphic file sizes as small as possible**

Improving Web Performance - Pages

- **Best for displaying static information**
- **Best for displaying embedded controls**
- **Transitioning existing HTML sites into Domino**

Improving Web Performance - Views

- **Avoid cascading views**
- **Avoid time sensitive formulas**
- **Avoid form formulas & multiple hide-when formulas**
- **Minimize use of view column formulas**
- **Remove all unnecessary view columns**

Improving Web Performance - General Guidelines

- Use `@ClientType` to toggle design features
- Use double brackets, i.e. `[[URL]]`, for URL redirection's
- Use scheduled agents to replace dynamic events
- Run agents in parallel rather than serial
 - `DominoAsynchronizeAgents=1`

Tips for Using Images

- Use 256 color (or less) low resolution images for small files & better performance
- Images now stored in their native format
- Use GIF or JPEG images whenever possible
 - JPEG best for continuous tone images
 - GIF best for large areas of primary color
- Support for web & adaptive palettes
- Using adaptive palette provides smaller better looking graphics than either notes or web palette
 - Particularly for monochrome images

Tips for Using Images - Image Resources

- **Use image resource for best performance, maintenance & caching**
- **Ability to create image rollovers**
 - **via image sets or JavaScript events**
- **Use template for image sharing across apps**

New R5 On Disk Structure (ODS)

- **Less I/O (~50%) than their R4 equivalents**
- **Database integrity and corruption prevention**
- **Enhanced database buffering mechanisms**
- **On line compaction**
- **Transactional logging and recovery**
- **New database properties**

New Database Properties

- Don't maintain unread marks **Select**
- Document table bitmap optimization **Select**
- Don't overwrite free space **Select**
- Maintain LastAccessed property **Deselect**
- Disable transaction logging **Deselect**
- Allow soft deletions **Select**
- Don't support specialized response hierarchy **Select**
- Don't allow headline monitoring **Depends...**
- Limit entries in \$UpdatedBy fields **Select**
- Limit entries in \$Revisions fields **Select**

New R5 Design Features - Embedded View Applet

- Brings Notes functionality to the web
- Great for reducing "roundtripping" on web
- Show single category
 - Great for "personalized" or dynamic views
 - The embedded view must first have been categorized for Show Single Category option to work
 - Category name will not appear in the embedded view
 - @Commands are not supported with Show Single Category but wildcards (i.e.. "*" & "") are supported

New R5 Design Features - Views

- **Don't show empty categories**
- **Anti-Folder Views**
 - **run agents against docs that are not in any folder**
 - **a place to look for unsorted documents**
- **Copy/Paste multiple columns is back!**

New R5 Design Features - Agents

- Before New Mail Arrives trigger
 - Use with a minimum amount of calculations
 - Test for a specific criteria to determine if you need to do further processing
- Ideal for...
 - Spam Removal
 - Examining and detaching large attachments
 - Filing message
- Performance improvements in Agent Manger

Improving Usability - UI

- Keep the UI simple
 - actions vs. buttons, progressive disclosure, dialog boxes & collapsible actions
- Use horizontal lines to separate parts of the form
- Use anchor links to move within large docs
- Avoid underlined or blue text (and especially the combination)

Improving Usability - UI

- Ability to specify tab order for fields
- Use new table styles to enhance UI
- Use native OS field controls
- Use text placeholders for graphics as they load or if they can't be displayed
- Use reserved custom form names for error handling
- Help users maintain sense of location

Increase Notes & Domino Performance

- New functionality can improve performance
- Examine why previous applications were developed the way they were
- Now is the time to upgrade and update application designs
- Use the right functionality in the right places

Developer Resources

- **Notes.Net**
 - <http://www.notes.net/>
- **Developer Central**
 - <http://www.lotus-developer.com/>
- **Domino Performance zone**
 - <http://www.lotus.com/performance>
- **Best Practices Guides**
 - <http://www.lotus.com/bpg>

Questions

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