



DataFlex to New Heights

# Building modern and secure WebApps

Harm Wibier



Security

# Web Properties

- > Web properties are invented to communicate with the client
  - > Configure the controls
    - > Properties like *psLabel* and *piColumnIndex*
  - > Query input
    - > Properties like *psValue* and *pbChanged*
- > They turned out to be real convenient for storing the application state



# Application state

- > No persistency on the server
  - > Process pooling
- > Calls should be self-explanatory



# Server Web Properties

- > Do not send data to the client that does not belong there
- > Server properties are stored in the database
  - > Serialized into JSON
- > { WebProperty=Server }
  - > Identifier stored in a client web property
  - > Same lifespan as a client web property
- > { WebProperty=ServerSession }
  - > Session key is the identifier
  - > Same lifespan as the session
  - > Can be shared across browser tabs / windows

# Which should I pick?

- > Only use { WebProperty=Client } if there is JavaScript that uses it
- > { WebProperty=Server } would be your default choice
- > Use { WebProperty=ServerSession } if you have an explicit reason to save the

# 19.1 usage of Server Properties

- > For 19.0 none of the packages used server properties
- > For 19.1 we switched several properties to server properties
  - > DDO States (Rowld's)
  - > View stack data
  - > ...
- > Less data on the client means more secure
- > Performance improved (a little bit)
  - > Less data being sent
  - > No more checksum calculation

# Session Manager Configuration

## > **pbSessionCookieHttpOnly**

- > Marks cookie as HTTP ONLY
- > Browsers will not allow access to the value from JavaScript
- > Prevents against session hijacking by cross-site scripting attacks

## > **pbSessionCookieSecure**

- > Marks cookie as SECURE
- > Browsers will not send the cookie of non encrypted connections
- > Makes sure your cookie will not be exposed over non secure connections
- > For development you probably want to have this turned off



# Improved session keys in 19.1

- > Used to be GUID values
  - > 128 bits of random data
  - > Encoded in HEX / Base16 (with dashes this is 36 characters)
- > Now uses windows crypto API for random data
  - > 216 bits of random data
  - > Encoded as Base64 (36 characters, fits the existing table)
- > Same amount of data, increased security!
- > **piSessionKeyLength**
  - > Configures the length in characters
  - > You do need to increase the WebAppSession field size



# Software as a Service

# What is multi tenancy?

- > A software architecture in which a single instance of software runs on server and serves multiple tenants.
- > A tenant is a group of users who share a common access with specific privileges to the software instance.
- > Multi tenancy contrasts with multi-instance architectures, where separate software instances operate on behalf of different tenants.

# Multi tenancy in DataFlex

- > Different datasets for different users
- > Software as a service strategy
  - > Online environment
  - > Each customer has his own administration



# Strategy: Database per tenant

- > Multiple databases with the same structure
- > Switching between tenants means switching database
- > **Pro:**
  - > Physical separation of data
  - > Simple backup & restore per tenant
  - > Simple import / export data
  - > Better scalability
- > **Con:**
  - > Licensing costs of SQL server could be higher
  - > Database structure updates more complicated

# Strategy: Single database

- > Data is constrained based on tenant ID
- > Switching between tenants means changing constraints (SQL filters)
- > **Pro:**
  - > Better performance
  - > Simpler database updates
  - > Licensing costs
- > **Con:**
  - > Database size
  - > Implementation more tedious
    - > Higher risk data mix-ups

# Strategies for separating clients

- > Switch based on login
  - > Shared user table, user determines the tenant
    - > Switch / constrain data in OnSessionPropertiesSet (cWebSessionManager)
- > Switch based on URL
  - > Determine and switch tenant in OnAttachProcess



Demo...



# Modern UI

A photograph of a rugged, green mountain peak under a clear blue sky. The text "Modern UI" is overlaid in yellow.

# Since 19.0

- > Swipe buttons in WebList
- > Swipable cards
- > Collapsible group
- > Non scrolling lists
  - > They expand to the amount of data
- > Color picker
- > Styled checkboxes

Album

Title

Sir Neville Marriner: A Celebrat

Artist

Academy of St. Martin in the Fi



- ☒ Checked
- ☐ Unchecked
- ☒ Checked & Disabled
- ☐ Unchecked & Disabled

More details..

## Floating panel

### Float By Control

In this mode the floating panel positions itself based on the position of another control. The automatic logic will try to center it below the control if that fits within the screen limits.

### Shadow

Adding this CSS class makes it show a border with shadow around the panel.

### WithArrow

Adding this CSS class adds an arrow that points towards the control it is positioning itself by.

# New in 19.1

- > Horizontal list / grid scrolling
  - > Meant for desktop style applications
  - > **pbAutoColumnSizing**
- > Expandable list panel
  - > **cWebListExpandPanel**
    - > peMode
      - > wleManual
      - > wleOpenOnRowChange
      - > wleOpenOnRowClick
      - > wleOpenOnRowClickCloseOnChange

# New in 19.1

- > Floating panel improvements
  - > Added designer support
- > Material design theme





DataFlex to New Heights

**Thank you!**  
**Are there any questions?**