Db2 for z/OS – Application Development Made Easy

Brian Tsao

IBM

Platform: Db2 for z/OS

Db2 for z/OS

117 Billion SQL / day

1579 Million Commits / day

67 of the Fortune 100 companies

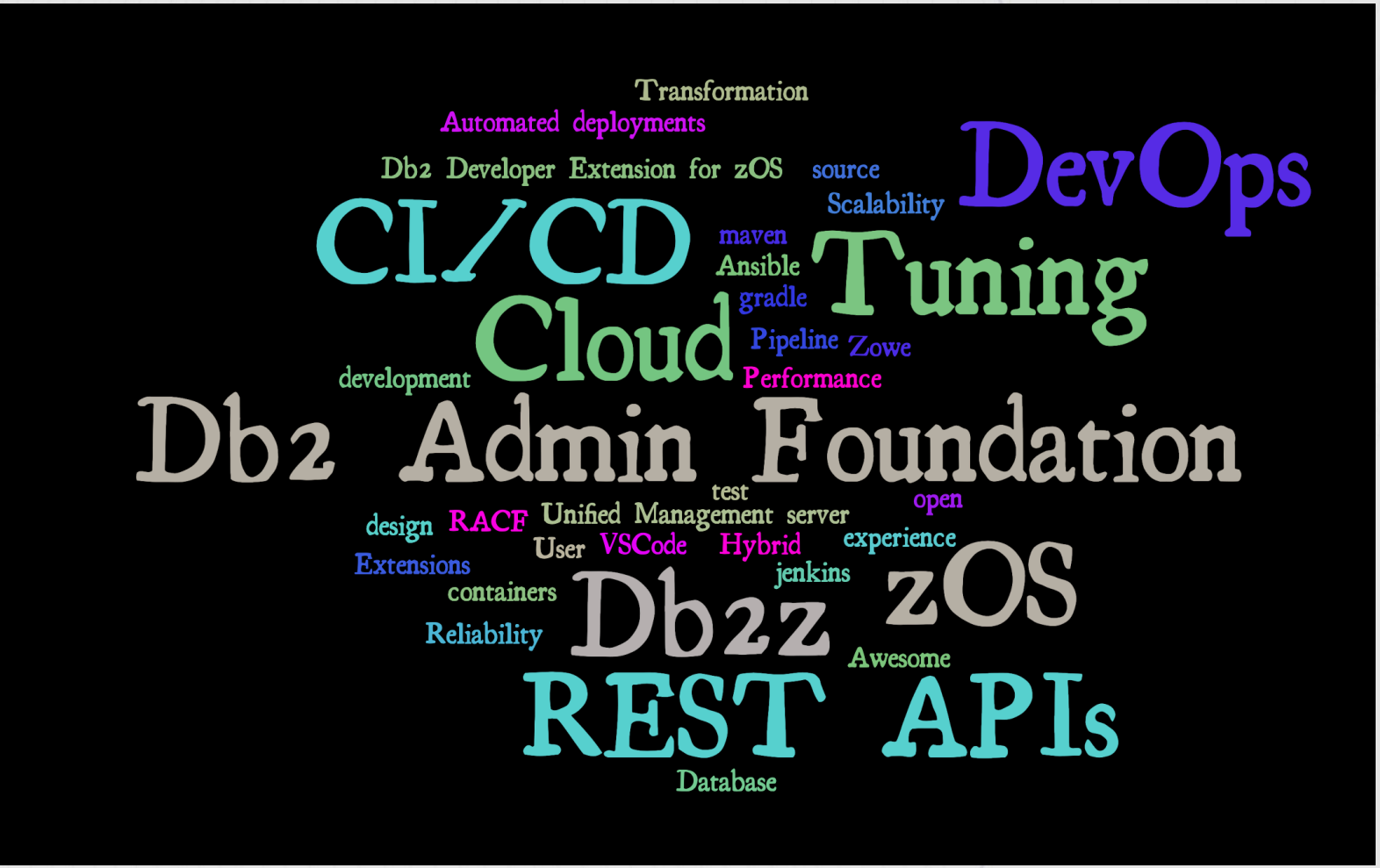
8 of the top 10 insurers

45 of the world's top 50 banks

7 of the top 10 global retailers

183 Billion Rows in a single table

Goal and product strategy



Bring Db2 to you!

Data Studio functions are replaced by role-based products

Deb
Early tenure z/OS application developer

IBM Db2 for z/OS Developer Extension

VS Code extension that provides language support for developing Db2 for z/OS SQL applications

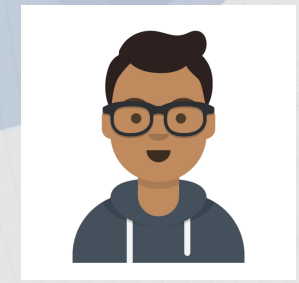
- SQL formatting, syntax checking, code completion
- Run SQL, review query results and history
- Deploy, run and debug native stored procedures
- Analyze and tune the performance of SQL queries

Kathleen
Experienced z/OS application developer

IBM Developer for z/OS (IDz)

Integrated Db2 tooling for application developers

- Generally available on Oct 14, 2022
- Single Eclipse install, macOS support
- Phase one of Db2 features delivered in IDz 16.0.0



Peter
Database Admin

IBM Db2 Administration Foundation for z/OS

One graphical UI that transforms administrative tasks

- Consolidates administrative capabilities of Data Studio, Data Server Manager and more
- Runs entirely on z/OS with zero-client installation
- Eases learning curve for new users and simplifies for experienced staff with task-driven features

Target persona

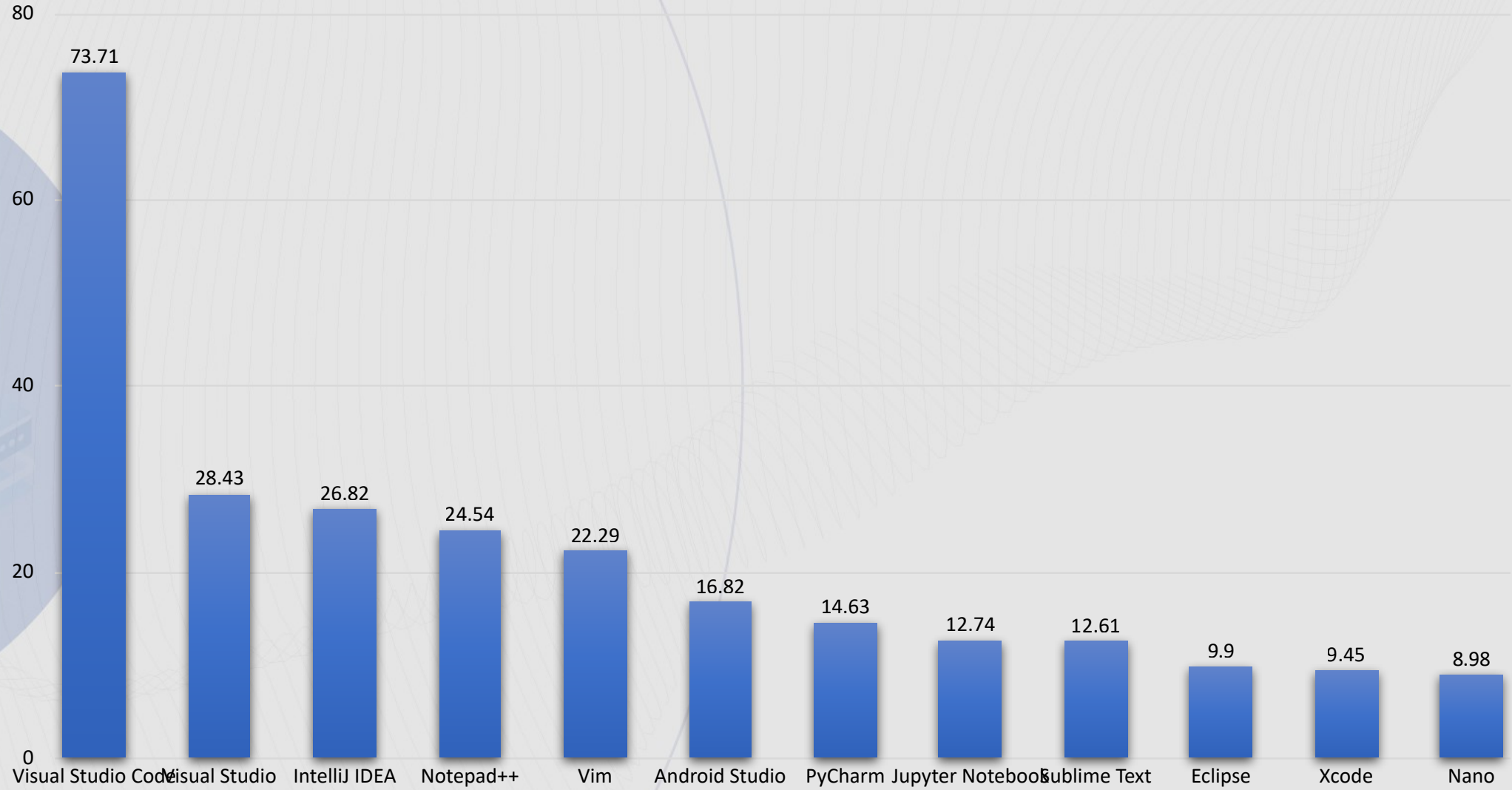
Deb
z/OS Developer

Use Web IDE with Db2 services to

- Code, debug, and tune Java, COBOL, PL1, Node applications that access Db2 for z/OS via SQL
- Code, analyze, run, tune SQL statements
- Code, debug, and tune Db2 for z/OS stored procedures
- Develop Db2 for z/OS Native Rest services

Why Visual Studio Code?

86,544 responses - 2023 stack overflow Developer Survey



Db2 Application development - Feature highlights and timeline

2020/21 V1.1

- Usability features
  - Syntax highlighting and checking
  - Code snippets
  - Code completion
  - Run SQL (BYOL)
  - JDBC tracing
- Native stored procedure debug
- SQL Formatting and embedded SQL execution
- Integration with SQL Tuning services
  - Single query tuning (No charge)
    - Statistics Advisor
    - Visual Explain
    - Query Environment Capture

2022/23 V2.1

- Db2 for z/OS v13 support
- IBM Developer for z/OS V 16.0 release with native support for Db2 for z/OS
- Integration with SQL Tuning services
  - Advanced single query tuning (Licensed)
    - Access Path Advisor
    - Access Path Comparison
    - Index Advisor
    - Query Rewrite Advisor
    - SQL Annotator
- Catalog Navigation support
  - Storage groups
  - Databases
  - Tables
  - Schemas
  - Indexes
  - Views
  - Plans
  - Packages
  - Stored procedures
  - Aliases
  - Sequences
  - Tablespaces
  - Triggers
  - UDF's
  - UDT's
  - Variables
  - REST Services

2024 Current V2.1.5

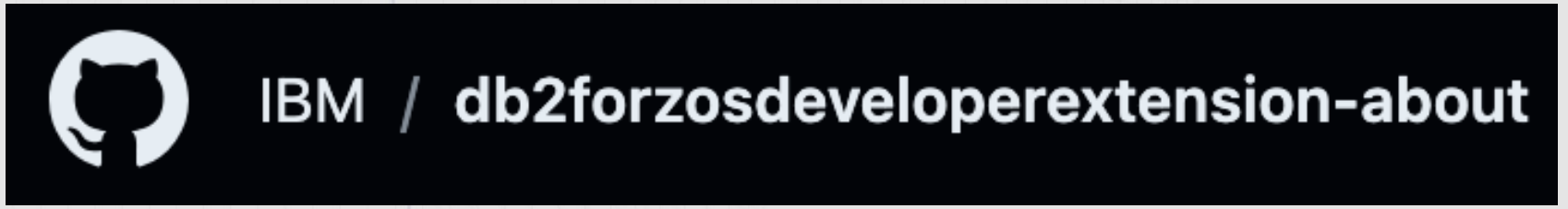
- External stored procedure development/deploy
  - Java stored procedure
  - External SQL stored procedure
- More Db2 for z/OS capabilities in IBM Developer for z/OS
- Interactive SQL execution within ***notebook interface***
- VSCode color themes
- Catalog Navigation multi-column filter
  - Storage groups
  - Databases
  - Tables
  - Indexes
  - Stored procedures

* Features list include key capabilities from Db2 Developer Extension for z/OS for Visual Studio Code

Db2 Application development - Feature highlights and timeline

Future

- Integrations:
  - IBM Db2 DevOps Experience for z/OS– Enable application instance provisioning, DDL development, business rules checking, etc.
- IBM Wazi dev spaces integration
- External stored procedure debugging
  - Java stored procedure
  - External SQL stored procedure
- Intelli-sense
- Import connections from Data studio
- DDL Generation
- More Db2 for z/OS capabilities in IBM Developer for z/OS



https://github.com/IBM/db2forzosdeveloperextension-about

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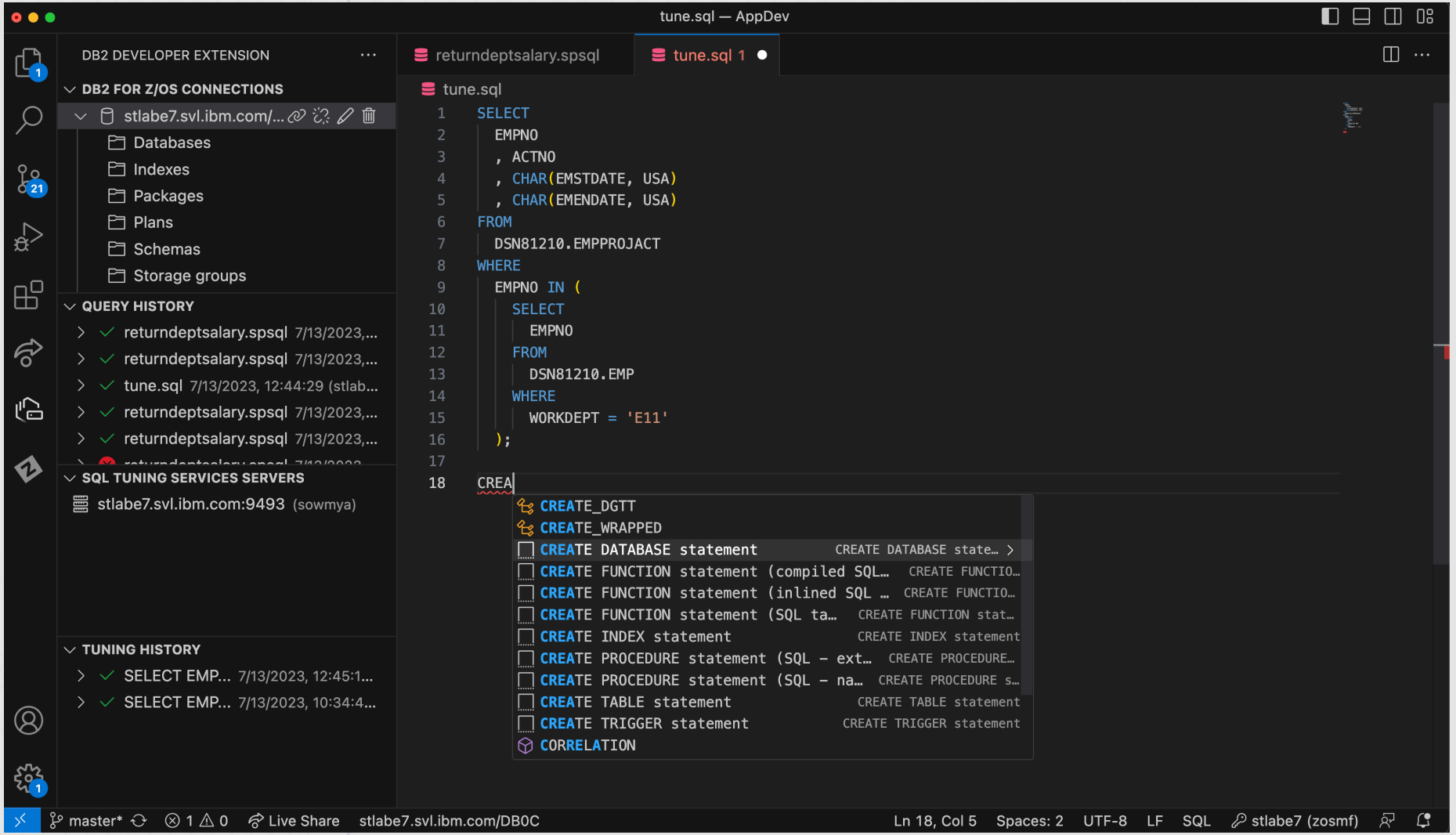
IBM Db2 for z/OS Developer Extension

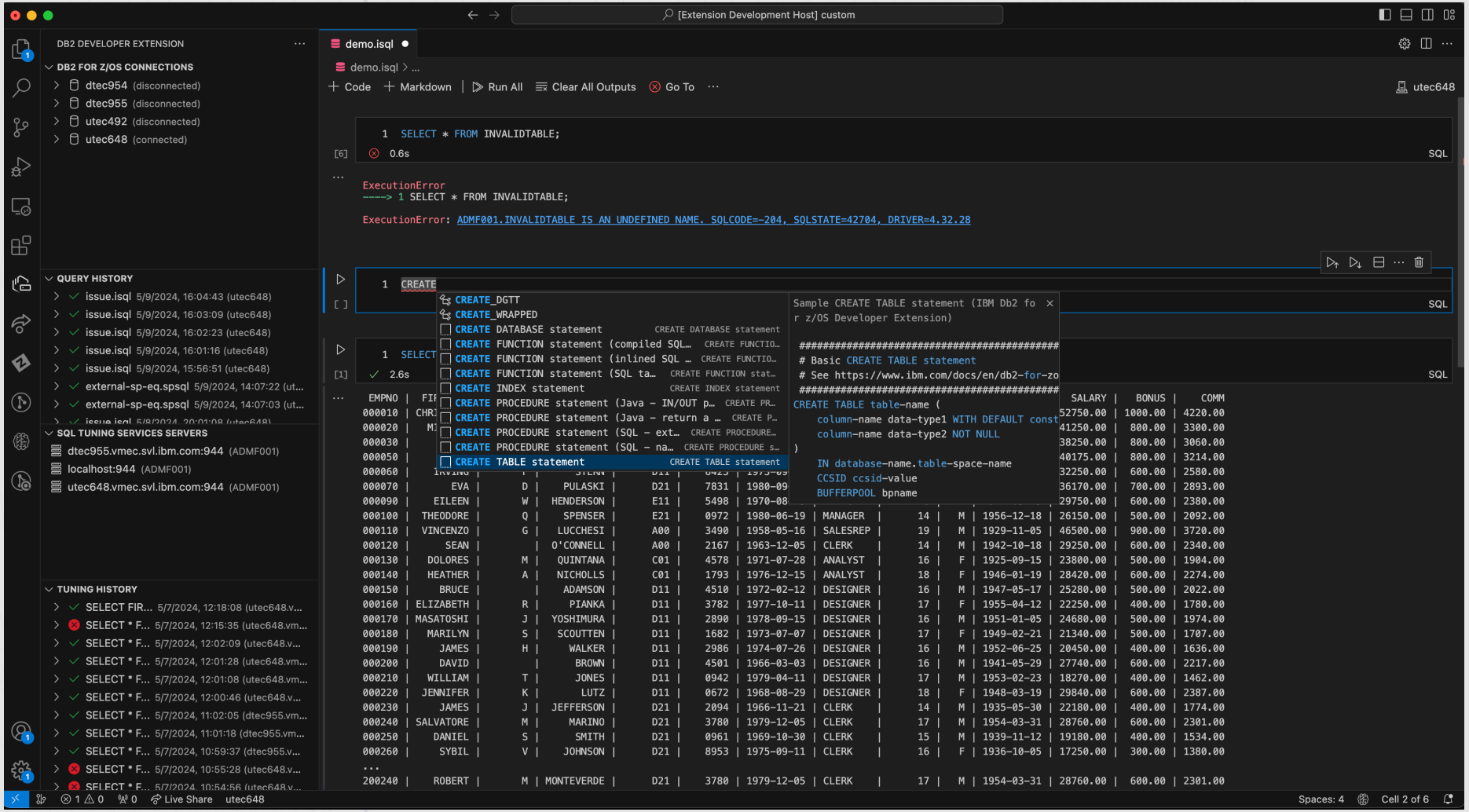
User interface – Db2 Application development support on Visual Studio IDE



IBM Db2 for z/OS Developer Extension

Interactive SQL

User interface – Db2 Application development support on Visual Studio IDE

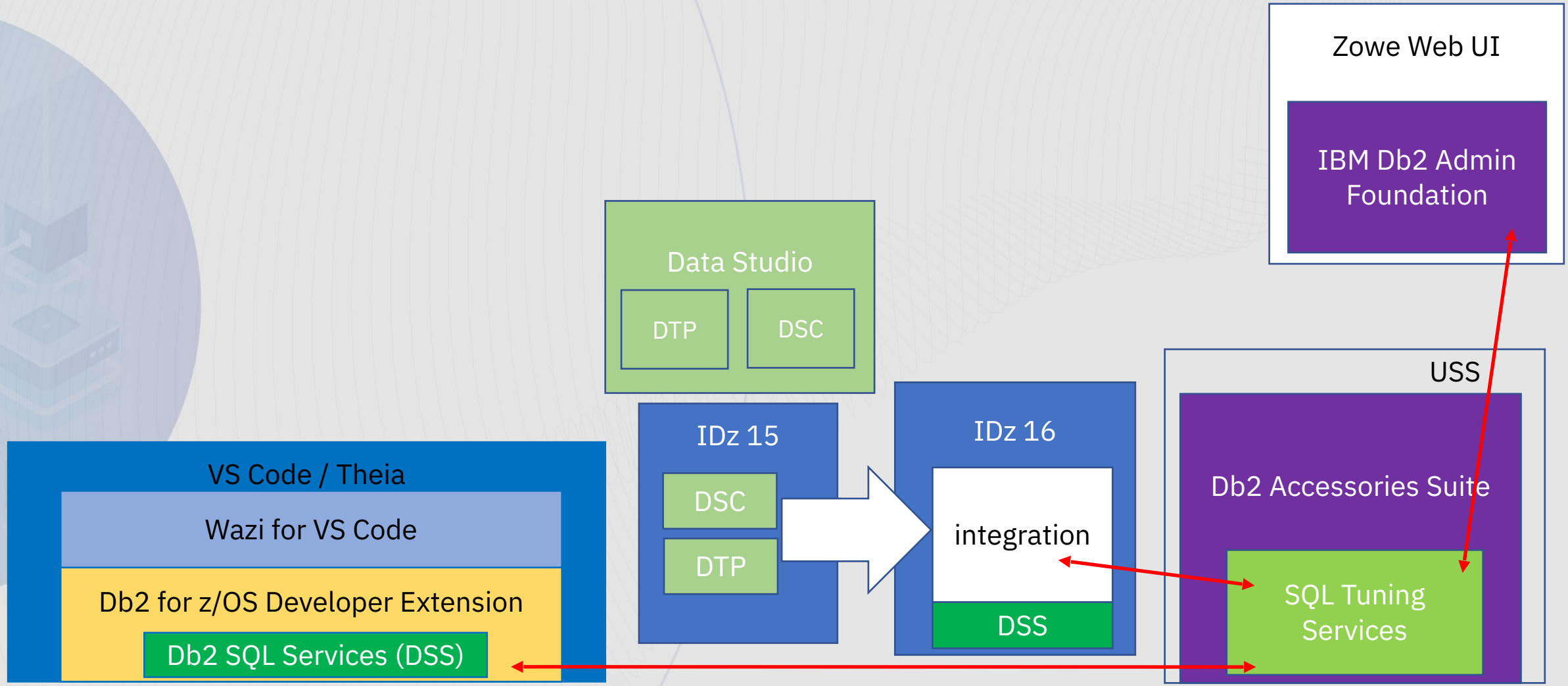


IBM Developer for z/OS is:

Anonymous customer comments

- *'I find it incredibly efficient to program COBOL with IDz. To have multiple window open, used the editor copy-paste commands, open up copybooks or get previews, so many features*
- *'Its an easy application to use and very helpful in my day-to-day role of production support'*
- *'Great for teamwork'*
- *'I use the product for my school homework, I love the layout, ease of use, and consistent efficiency to get my homework done'*
- *'There is some nice features in IDz, regarding USS, debugging, dataset browsing and copying, source analysis, etc. Furthermore, we use Git, and have direct access to our source code so we actually give the opportunity to work in a "normal" manner in IDz/ Eclipse -...this makes it easier for the new mainframer ....'*

Future Db2 for z/OS Tooling for developers (using Eclipse)



Multi-phased approach for delivery of Db2 for z/OS features within IDz

IDz 16.0.0 (4Q22)

- Configure IDz to use the Db2 for z/OS client license file
- Configure DB2 Subsystem in RSE
- Select a SQL Statement and Execute It
- Configure SQL Execution Options
- Browse SQL Results and Review Prior SQL Executions
- Integration with Db2 Accessories Suite for 3 no-charge SQL Tuning Services
  - Visual Explain,
  - Stats Advisor,
  - Query Environment Capture

IDz 16.0.1 (1Q23)

- Run SQL, Tune SQL from LPEX
- COBOL & PL/I Editor support for Semantic Validation of SQL Objects

IDz 16.0.2 (2Q23)

- Explore DB2 Catalog (Phase 1)
  - Schemas, Storage Groups, Tables, Databases
- Favorites
- Browse Tables
- Override JDBC driver
- Connectivity & licensing improvements

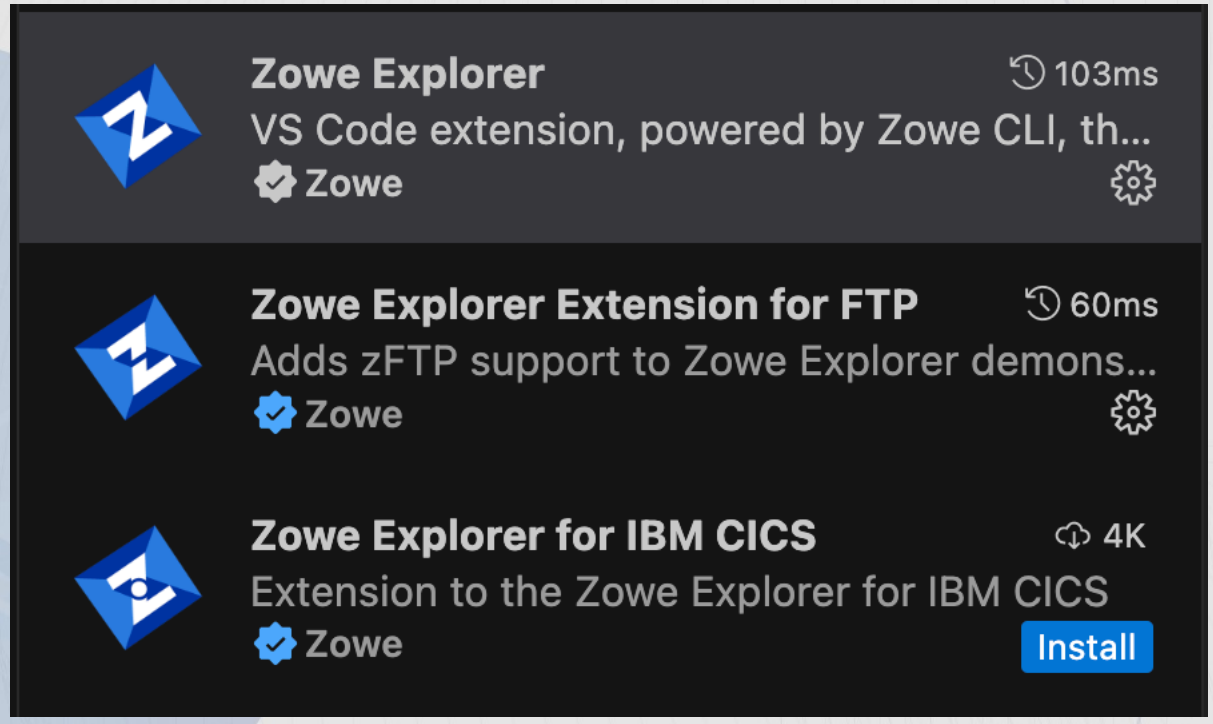
4Q23

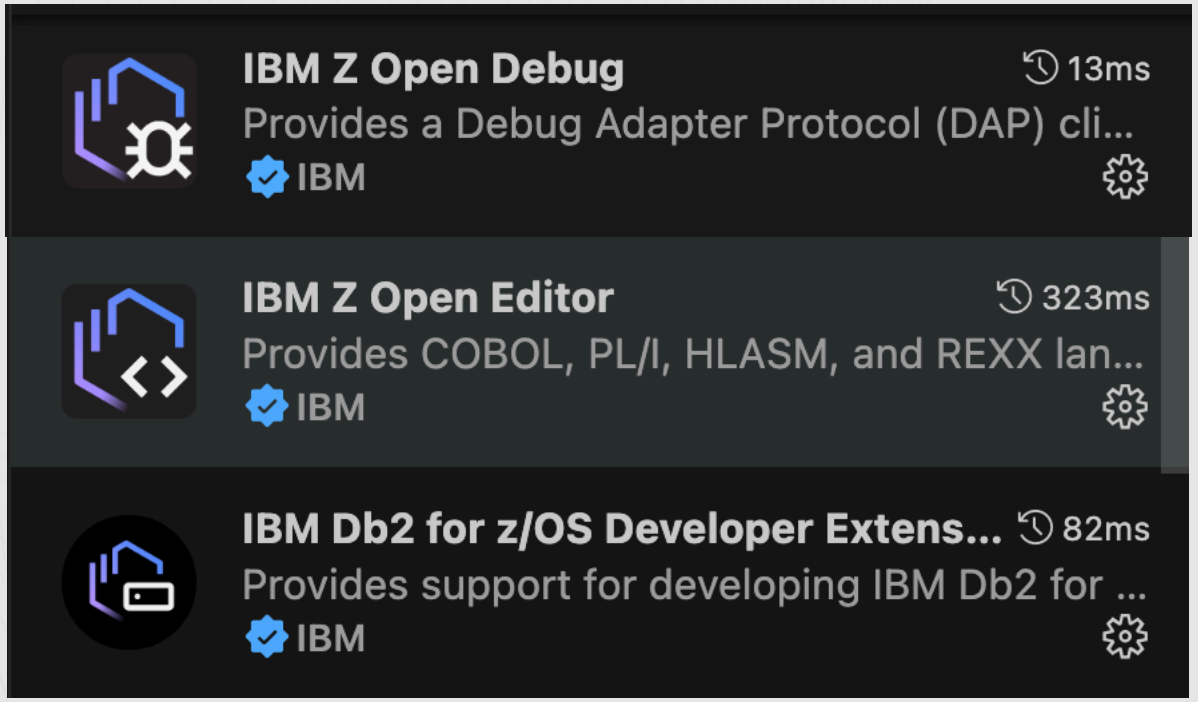
- Explore DB2 Catalog (Phase 2)
  - Indexes, Packages, Plans, Stored Procedures, Views
- SQL Editor with Format SQL
- New SQL Script
  - Open connected SQL Editor
  - Open a Query History statement(s) in a SQL editor
  - Open DDL or Package Statements in a SQL Editor
  - Generate a SELECT statement with all columns from a Table/ View
- Edit Tables
- Push to client support

Planned for 2024

- Explore DB2 Catalog (Phase 3)
  - Table spaces, Triggers,UDFs, Aliases, Sequences, UDTs, Variables, REST services
- DCLGEN (Table, View, Alias)
- Stored Procedures
  - Create, Deploy, Debug/ Run
- Overview Diagram

IBM - VS Code Extensions





Demo time!

Thank you!

Platform: Db2 for z/OS