

IDUG

2026

CENTRAL CANADA Db2 TECH CONFERENCE

Toronto | May 11-13

IBM Project Alpha

Andrew Hilden, IBM

Session Code: B05



Platform:

LUW

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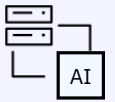
Agenda

- IBM Project Alpha Introduction and Overview
- Target Workloads
- IBM Project Alpha and the AI Era
- SaaS Capabilities
- Brief Architecture Overview



Introducing the **IBM Project Alpha**, enabling AI workloads and AI development for a New Era

IBM Project Alpha, provides an infrastructure free SaaS experience and enables developers to create faster than ever before while enabling scaling and enterprise features for all database workloads.



AI Ready

→ Built for AI development and AI workloads

enabling developers to create database applications and make modifications using powerful integrations and branching capabilities.

Worry free

→ Complete autonomous SaaS

workloads with enterprise capabilities freeing you up from the management of database resources

Flexible

→ **Dramatic cost savings** for workloads while allowing you to meet the highest demands when needed



Enterprise Grade SaaS

• Fully Managed

IBM Project Alpha Provides full SaaS Capabilities

Activities

- **Managed of Patches and Updates**
Patches and updates are applied for you with zero or minimal downtime
- **Monitoring and Availability**
Fully monitored to detect problems and make sure the database is always available.
- **Health Check**
Proactive scans for common issues
- **Backup & Recovery**
Automated backups with cross regional redundancy and point in time recovery to ensure your data is safe.
- **Full support**
Automatic and full service support



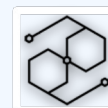
Resource Free

No resources to worry about

IBM Project Alpha automatically scales up and down to meet your workload requirements..

Activities

- **Scale up as workload grows**
IBM Project Alpha identifies and rapidly scales up to ensure performance remains consistent
- **Scales down to 0 to save costs**
IBM Project Alpha scales resources down to 0 to ensure you are not paying for idle resources
- **Pay for what you use**
IBM Project Alpha is built to optimize costs by only paying for what you use.
- **Configurable**
Configure minimum and maximum resource limits to ensure you are in control of your costs



Ready For AI Development & Workloads

Optimized for Context Engineering and AI Workloads

Built with context engineering in mind to ensure allowing for rapid prototyping and feature delivery and capable for meeting the depends of AI machine driven workloads

Activities

- **Build database enabled applications quickly**
MCP server allows AI tools like Bob and Claude to interact with IBM Project Alpha directly accelerating productivity.
- **Great for Ephemeral Development**
Quickly provision and delete instances in seconds allowing you to prototype and test with speed and without worry.
- **Powerful Branching Capabilities**
Powerful branching capabilities increasing your velocity.
- **Great for spikey and machine driven unpredictable workloads**
Machine driven workload require management that operates as the same pace

IBM Project Alpha

Modern SaaS Developer Friendly Autonomous



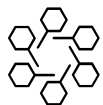
- Always the latest generation of Db2 Software available via committed spend or pay as you go via **Cloud Marketplace**



- **Scales to 0** when there is no workload (All connections are Idle for 5 mins)



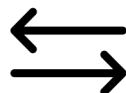
- **Incrementally scales** in **granular increments** mirroring workload requirements with min and max settings



- **API, CLI and MCP enabled** Allowing you to integrate into you AI Engineering and CI/CD processes with ease.



- **Near instant Provisioning** using Infrastructure as Code, UI, CLI or API



- By the second **consumption based** billing



- Provision a new database instances as **branches** of an existing database.



- **No impact to connections** during scaling or most infrastructure maintenance

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IBM Project Alpha - Built for all database workloads

IBM Project Alpha

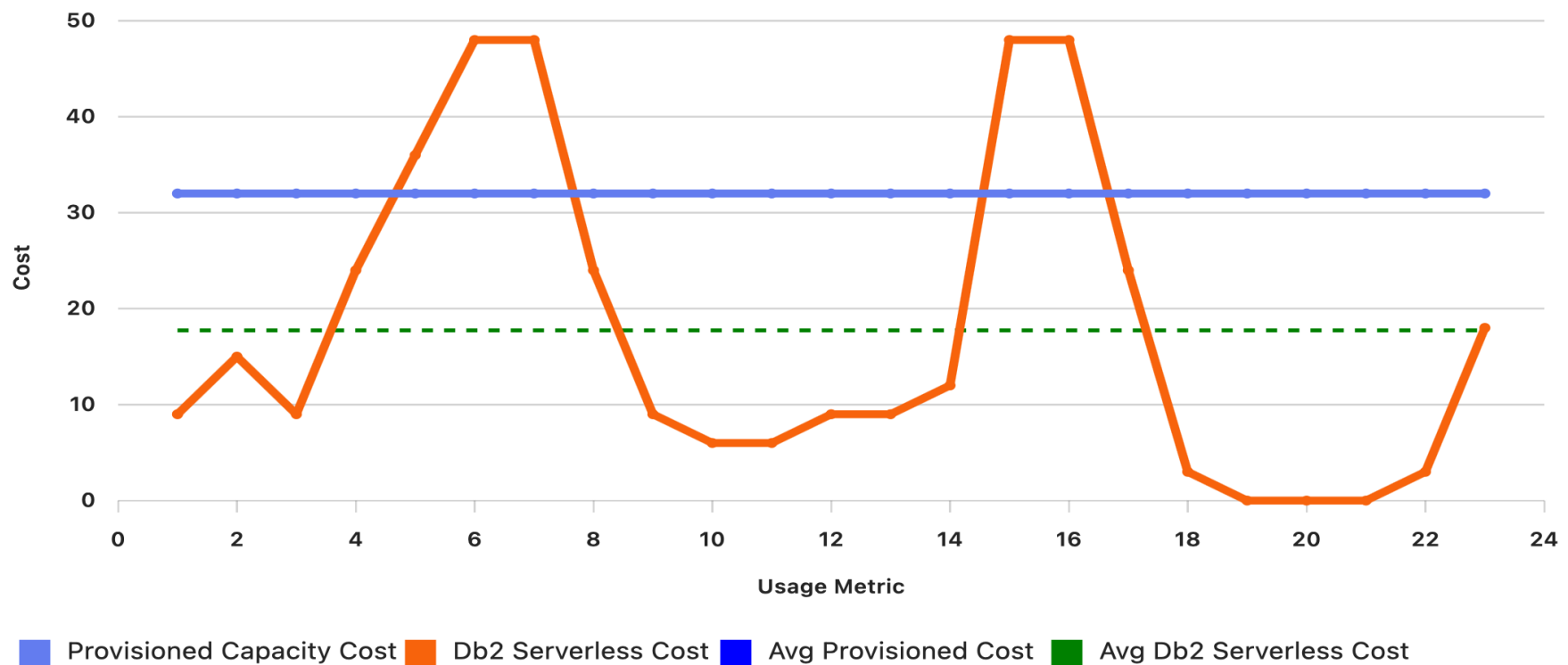


**Built for
Unpredictable and
Stable Workloads**

- Initially focused on **transactional** and **single-node analytics** workloads
- Rapidly evolving to support high-volume, **large-scale warehouse workloads (OLTAP)**
 - With full horizontal and vertical scaling
- **AI Workloads**
 - Vector
 - Ephemeral
 - Machine Driven
- Great for **unpredictable workloads**
 - Non-uniform
 - Spikey

Example workload profile: Cost for IBM Project Alpha versus Provisioned Capacity Costs

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6 days a week – 9-5 PM – Peak workload required 8vCPU, 16GB of RAM, smaller workload from 5 PM until midnight and no workload after midnight until 7 AM

Note: **Fictual Units costs are for demonstration purposes only.** Actual ratios and Fictional Units are not reflected in dollars.

Typical Database SaaS with provisioned capacity

Customer Acquires and Provisions 8 VCPU, 16 GB HA system.

- System runs at 8vCPU and 16 GB of memory for 24 hours at a cost of 8 RU per hour

Total Cost Per Day – **192 Fictional Units**

IBM Project Alpha

Customer acquires and IBM Project Alpha instance (they optionally specify a minimum and maximum size)

- System runs at 4 vCPU for 4 hours at a cost of 6 RU per hour and at 8 vCPU for 4 hours at a cost of 12 RU per hour
- System runs at 1 vCPU and 2 GB of ram from 5 until midnight for a rate of 1.5 RU per
- System scales to 0 from midnight until 7 AM at a rate of 0 RU per hour

Total Cost Per day – **66.5 Fictional Units**

Used by millions of users to schedule and have other users purchase event tickets. The events are scheduled by any of its users and the workload is very unpredictable and may even be idle for long periods of time until major events are scheduled.

Note: Fictional Units costs are for demonstration purposes only. Actual ratios and amounts will differ.

Database SaaS with provisioned capacity

ACME acquires and provisions a 64 VCPU, 128 GB HA system.

- System runs at 64vCPU and 128 GB of memory for 24 hours at a cost of 128 units per hour
- ACME throttles users to ensure the database is not overloaded and if it throttles for an extended time the system is scaled up by an administrator.

Total Cost Per Month – 1536 RU * 30 = **46,040**

Fictional Units

IBM Project Alpha

Customer acquires IBM Project Alpha instance (They optionally specify a minimum and maximum size)

- System runs at 4 vCPU normally
- System scales up to 64 vCPU during a major event for 4 hours twice a month
- System scales to 0 from midnight to 6 AM 50% of the nights

Total Cost Per Month = **4784 Fictional Units**

ACME is developing an application with a team of 15 developers

To ensure quality as well as efficiency they have an advanced pipeline that triggers up to 100s of times per to ensure changes going into the application are tested extensively..

Note: Fictional Units costs are for demonstration purposes only. Actual ratios and amounts will differ.

Database SaaS with provisioned capacity

A database is setup per developer it is reused each time by the pipeline but requires cleanup each time and in between test cases.

Or:

A shared database is created with enough capacity and it is reused.

Or:

A new database is provisioned and that time is added to the execution of the pipeline.

IBM Project Alpha

The pipeline uses IaaS or MCP and provisions a new IBM Project Alpha instance in minutes branching from a master branch.

- It provisions many databases to run a set of parallel tests to improve developer productivity while keep costs low due to low usage
- In the case of a failure the pipeline stops using the database and scales it to 0 until investigation can be done.

ACME has a shipping and inventory system that does uniform processing and scheduling

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The workload is very stable and requires 64 vCPU and 64 GB of RAM and does not typically differ over the course of a day or week.

Note: Fictional Units costs are for demonstration purposes only. Actual ratios and amounts will differ.

Database SaaS with provisioned capacity

ACME acquires and provisions a 64 vCPU, 128 GB HA system.

- System runs at 64vCPU and 128 GB of memory for 24 hours at a cost of 64 RU per hour

Total Cost Per Day – **1536 Fictional Units**

IBM Project Alpha

ACME provisions a IBM Project Alphsystem and specifies and min and max scaling value of 64 vCPU.

- System consistently scales and stays at 64 vCPU and 128 GB of RAM at a cost of 96 RU per hour

Total Cost Per Day – **2304 Fictional Units**

IDUG LLM Enabled Agentic Application

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An application leverages LLMs to generate a non optimized machine-driven workload on the database that must run fast to give answers to users. These workloads cause the system to scale high and then are relatively idle for long periods of time.

Note: Fictional Unit costs are for demonstration purposes only. Actual ratios and amounts will differ.

Database SaaS with provisioned capacity

ACME acquires and provisions a 64 VCPU, 128 GB HA system.

- System runs at 64vCPU and 128 GB of memory for 24 hours at a cost of 64 RU per hour

Total Cost Per Day – **1536 Fictional Units**

IBM Project Alpha

ACME provisions a IBM Project Alpha system and specifies a max scaling value of 64 vCPU.

- System infrequently scales up to 64 VCPU
- Normal workloads are consuming very little Capacity

Total Cost Per Day – **384 Fictional Units**

Agenda

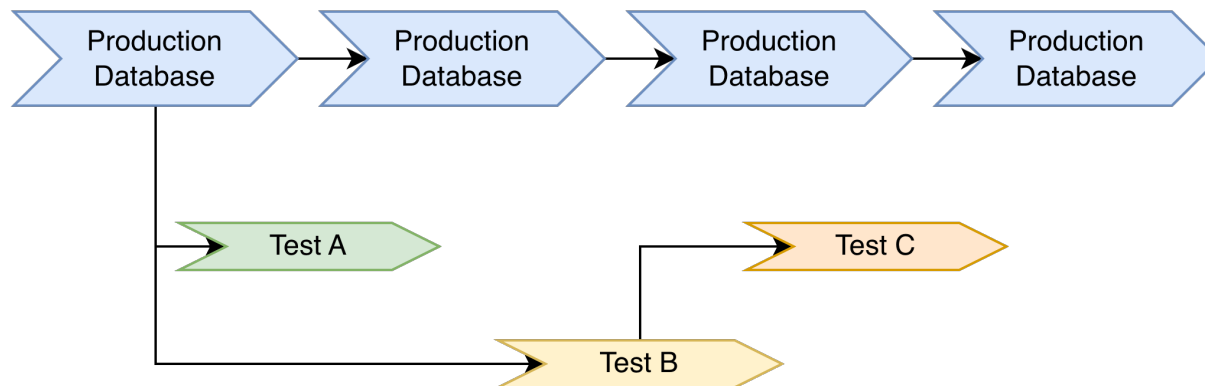
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IBM Project Alpha for the AI Era - Key Enabling Capabilities

- IBM Project Alpha provides **branching capabilities** that allow you to integrate ephemeral instances into your processes for testing, reporting or other use cases
- IBM Project Alpha provide **MCP Servers** that help supercharge your engineering abilities
 - mcp.db2.ibm.com
- A **rich API** for integration with tools and processes
 - api.db2.ibm.com
- A **CLI** for tight loop efficient token usage scenarios
- IBM Project Alpha **elastically grows and shrinks** with your workload. You need not worry about these details.

IBM Project Alpha enables **10X Engineers!**

Imagine if every time you wanted to test an application on your computer you needed to reinstall your operating system. **Why should you have to rebuild your database just to add or test a new feature?**



- Quick Branching
- Ephemeral
- No infrastructure
- Dev to production

From Prompt to Production – IBM Project Alpha

I need an application and a database to track the inventory of the furniture available in our retail stores. Implement this

Control IBM Project Alpha
via Prompts

Create a database and call it IDUG. Create a schema that represents * attendees at the conference and the sessions they attended.

Automatically provisions a database,
designs and creates a schema for
you with optimizations and
implements and then tests the
application.

```
Create a database and call it IDUG. Create a schema that represents the attend... 33k / 200k 0.08 X
```

IDUG database created successfully with the following schema:

Tables Created:

- attendees** - Stores conference attendee information
 - attendee_id (Primary Key)
 - first_name, last_name, email (unique)
 - company, job_title
 - registration_date, created_at, updated_at
- sessions** - Stores conference session information
 - session_id (Primary Key)
 - session_code (unique), title, description
 - speaker_name, speaker_company
 - session_date, start_time, end_time
 - room, track, capacity
 - created_at, updated_at
- session_attendance** - Junction table tracking attendance
 - attendance_id (Primary Key)
 - attendee_id (Foreign Key to attendees)
 - session_id (Foreign Key to sessions)
 - check_in_time, rating (1-5), feedback
 - created_at
 - Unique constraint on (attendee_id, session_id)

Indexes created for optimal query performance on email, company, session dates, and foreign key relationships.

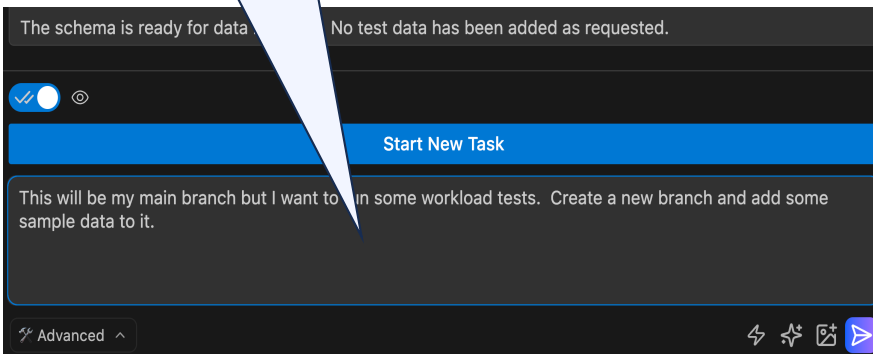
The schema is ready for data insertion. No test data has been added as requested.

IDUG Easily branch and add test data

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Create new
databases
branches and add
test data



Workload testing branch created and populated with sample data:

Branch: workload-testing

Sample Data Added:

- **10 attendees** from various companies (TechCorp, DataWorks, Innovate Solutions, etc.)
- **10 conference sessions** covering topics like:
 - Database performance tuning
 - Security best practices
 - Cloud migration strategies
 - AI/ML integration
 - High availability and disaster recovery
 - Containerization and Kubernetes
- **29 attendance records** linking attendees to sessions they attended, including:
 - Check-in timestamps
 - Session ratings (1-5 scale)
 - Feedback comments

The main branch remains clean without test data, while the workload-testing branch is ready for performance testing and workload simulations.

Generate simple and complex tests all with prompts

Use simple
prompts for
powerful actions

Run a workload for 10 seconds

Task Completed

Workload test completed successfully on the workload-testing branch:

Test Results:

- **Duration:** 10.03 seconds
- **Total queries executed:** 188
- **Queries per second:** 18.75
- **Errors:** 0

The workload simulation ran 10 different types of queries including:

- Attendee searches and filtering
- Session attendance aggregations
- Rating calculations
- Join operations across multiple tables
- Group by operations on various dimensions

All queries executed successfully with no errors, demonstrating the database schema is working correctly under load.

Analyze your data with natural language

How many users attended the "Security best practices" session?

 Task Completed



4 attendees attended the "Database Security Best Practices" session in the workload-testing branch.

Agenda

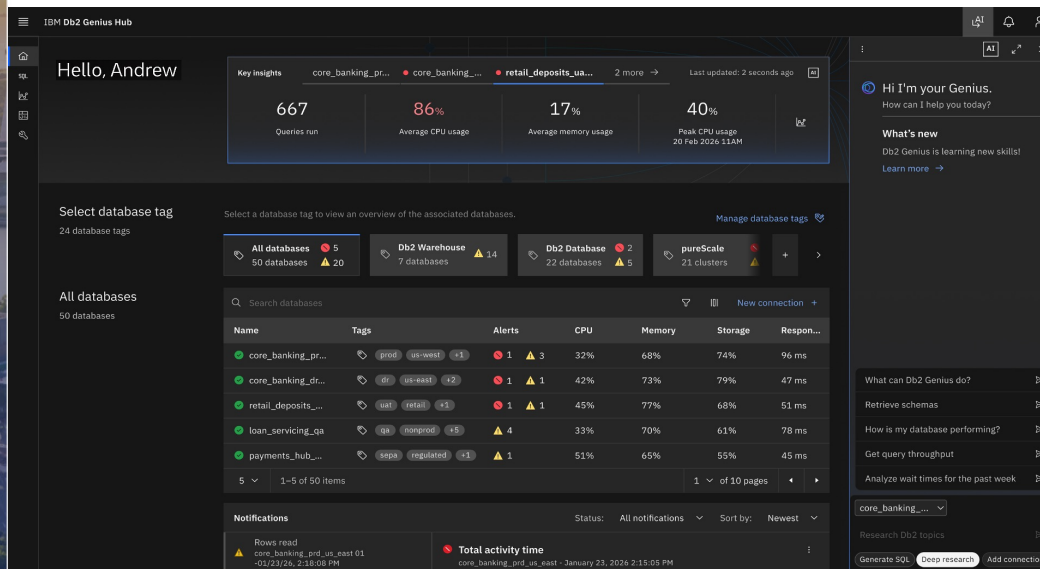
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- Automated **patching** and **management** of components
- Operationally Monitored and **Managed 24X7X365**
- **Near Zero Downtime Updates** and Maintenance Window Scheduling
- Automatic **Backups** and **Point In Time Recovery**
- Ongoing **security monitoring** and **secure practices** built in

Enabled with Db2 Genius capabilities

#IDUGDb2

Insights when you need them ...
Just ask...



11:51 PM

I'm your Db2 assistant, here to help with a wide range of database tasks:

Performance Troubleshooting & Analysis

Diagnose and resolve performance issues including slow queries, bottlenecks, lock contention, memory pressure, transaction log problems (log full, log pressure, blocking transactions), spilling, and queuing. I identify root causes and provide actionable recommendations.

Database State & Telemetry Retrieval

Retrieve current and historical database information including CPU usage, active queries, queued requests, application status, tablespace utilization, health checks, resilience status, configuration values, and system metrics.

Disk Space Management & Optimization

Analyze storage usage, identify space reclamation opportunities, recommend reorganization (reorg) candidates for tables and indexes, troubleshoot tablespace growth, and provide optimization strategies.

Db2 Documentation & Knowledge

Explain Db2 concepts, features, configuration parameters, SQL syntax, error codes, best practices, and internal behavior. Provide SQL queries and commands for you to use based on official documentation.

IBM Db2 Support Ticket Preparation

Help you prepare comprehensive support tickets for IBM Db2 support by gathering problem details, environment information, troubleshooting history, and recommending relevant diagnostics to collect.

Connection Information

You're currently connected to the **BLUDB** database as user **db2inst1** using the **PROD_ANALYTICS_SVL** profile.

What would you like help with?



PROD_ANALYTICS_SVL x

Type something...

SQL Generate SQL Deep Research

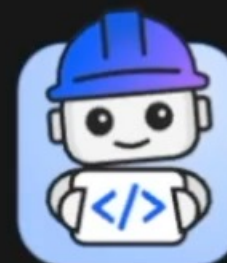
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A Short Description of the Architecture

COMPONENT	PRIMARY ROLE	KEY CHARACTERISTICS
Control Plane	Provides Service Interfaces	User Interfaces, API, MCP Servers, Provisioning, Getting Started Tutorials
IBM Project Alpha Service Proxy	Connection handling and routing to Database Instances	Stable endpoint, helps scale-from-zero, routes traffic to data plane, improves maintenance, maintains connections
IBM Project Alpha Instances	Execute database workloads	Elastic compute, auto scale up/down every second, ephemeral, provides isolation and performs the work of the Db2 Engine.
IBM Project Alpha Storage	Persist database data	Durable, physically independent of compute

78%



Hi, I'm **Bob**

Ask me questions or let me code for you.

[Documentation](#)



What would you like me to help with?

(@ to add context, / for commands, hold shift to drag in files/images)

IBM Bob

Editing evolved

Start

- [New File...](#)
- [Open...](#)
- [Clone Git Repository...](#)
- [Connect to...](#)

Recent

general ~/repos
db2s-mcp-server ~/repos
serverless-docs ~/bobdirs
serverless-docs ~/bobdir2
gss_dashdb_iam ~/bobwork
[More...](#)

Walkthroughs

[Get started with IBM-...](#)
Customize your editor, learn the basics, and start coding

[Learn the Fundamentals](#)

[Working with...](#) [Updated](#)

[Get Started ...](#) [Updated](#)

[Modernize w...](#) [Updated](#)

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IBM-Bob Announcements

There are no current announcements.

☒ Show welcome page on startup

Browser Session 19/19 ✓ Closed browser \$0.4839

http://localhost:3000

 **Db2 Genius Hub Conference**

Attendee Registration & Check-in System

1

TOTAL REGISTERED

1

CHECKED IN

0

NOT CHECKED IN

Register Attendee

Check-in

View All

All Attendees

All

Checked In

Not Checked In

We need an application that tracks users atte... 80k / 200k 1.13

All tasks completed! 7/7

near-time statistics dashboard

Files: index.html, styles.css, app.js

4. Documentation

Complete README with setup instructions

API documentation and usage examples

Located in: README.md

Testing Results:

✓ Successfully registered attendee "John Smith"

✓ Statistics updated correctly (1 registered, 0 checked in)

✓ Check-in functionality working (updated to 1 checked in)

✓ UI responsive and visually appealing

To use the application:

```
cd db2-conference-tracker
npm install
npm start
```

Then open <http://localhost:3000> in your browser.

The server is currently running and ready to track conference attendees!

✓

👁

Start New Task

What's on your mind?

(@ to add context, / for commands, hold shift to drag in files/images)

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