

The Salesforce logo, consisting of a blue cloud shape with the word "salesforce" written in white lowercase letters inside it.

salesforce

# CheckMate

## A.I.-based Dynamic Zonefile checker

**Pallavi Aras-Mathai**

DNS-OARC 46 Workshop

May 16<sup>th</sup> 2026

Edinburgh, Scotland





# Agenda

- 01.** Existing zone checkers (static and online)
- 02.** Introduce concept of CheckMate
- 03.** CheckMate - Design
- 04.** Demo

# Multiple DNS Zone Checkers



## Static Zone File Checkers

Validate syntax and format errors before deployment.

- Bind's  
Named-checkzone
- NSD's  
nsd-checkzone

## Online Tools for Record State

Monitor live propagation and DNSSEC health.

### [zonemaster.net](https://zonemaster.net)

- Checks the health of the domain

### [dnschecker.org](https://dnschecker.org)

- Checks global DNS resolution

### [dnsviz.net](https://dnsviz.net)

- DNSSEC validity of a domain

# Multiple DNS Zone Checkers

## Static Zone File Checkers

Validate syntax and format errors before deployment.

- Bind's `named-checkzone`
- `nsd-checkzone`

## Online Tools for Stateful DNS

Check DNS propagation and DNSSEC health.

### [zonemaster.net](https://zonemaster.net)

- Checks the health of the domain

### [dnschecker.org](https://dnschecker.org)

- Checks global DNS resolution

### [dnsviz.net](https://dnsviz.net)

- DNSSEC validity of a domain

What do all these DNS Checkers have in common?

# Multiple DNS Zone Checkers

## Static Zone File Checkers

Validate syntax and format errors before deployment.

- Bind's `named-checkzone`
- `nsd-checkzone`

## Online Tools for Dynamic State

Monitor DNS propagation and DNSSEC health.

### [zonemaster.net](https://zonemaster.net)

- Checks the health of the domain

### [dnschecker.org](https://dnschecker.org)

- Checks global DNS resolution

### [dnsviz.net](https://dnsviz.net)

- DNSSEC validity of a domain

*Check-zone utilities only check "Static zone file" records*

# Multiple DNS Zone Checkers

## Static Zone File Checkers

Validate syntax and format errors before deployment.

- Bind's `named-checkzone`
- `nsd-checkzone`

## Online Tools for State

Monitor propagation and DNSSEC health.

### [zonemaster.net](http://zonemaster.net)

- Checks the health of the domain

### [dnschecker.org](http://dnschecker.org)

- Checks global DNS resolution

### [dnsviz.net](http://dnsviz.net)

- DNSSEC validity of a domain

**Online tools find issues after zone changes have propagated.**

# Wish list for a Zone file checker

---



- ⓘ Flags an error **before** DNS record is even added to the zone.
- ⓘ Informs you what can or cannot be added
- 💬 Talk to you in natural language?

# Wish list for a Zone file checker



ⓘ Flags an error **before** DNS record is added to the zone.

ⓘ Informs you if a record cannot be added

*“What If” its all possible?*

to you in natural language?

# Wish list for a Zone file checker

---

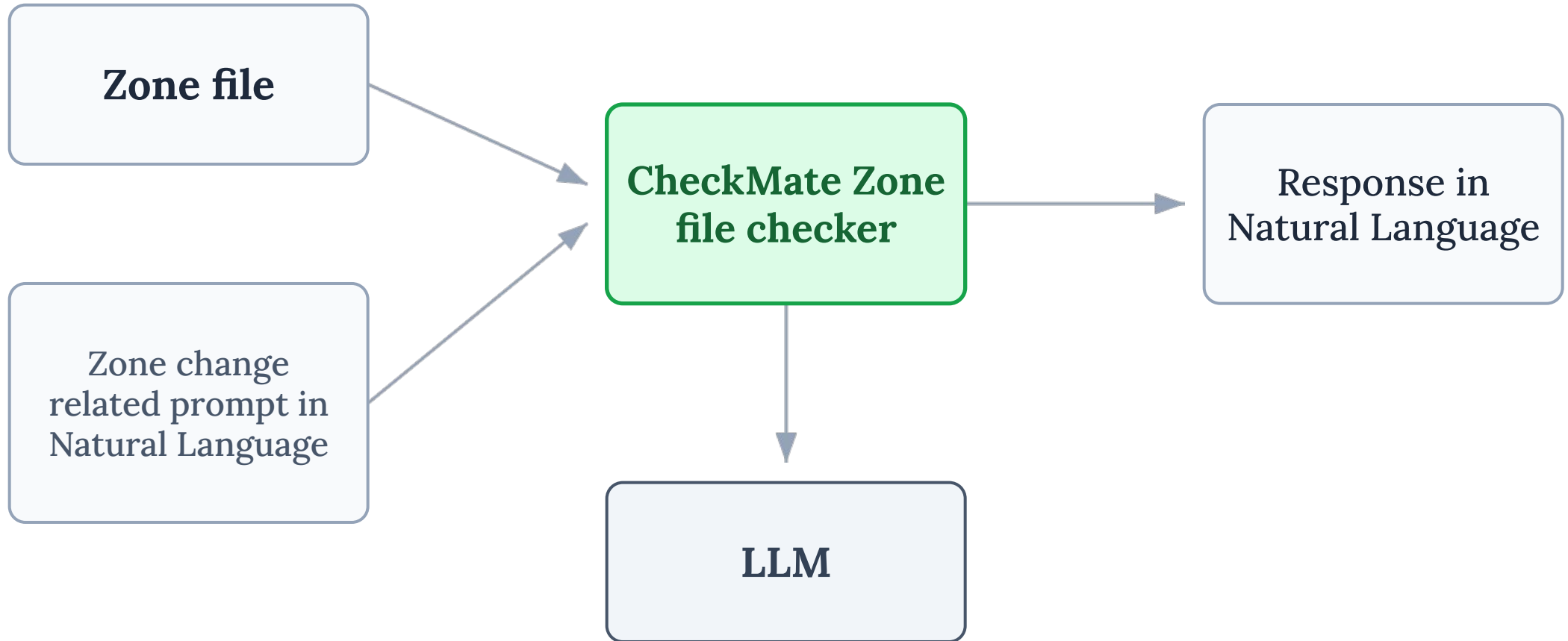
⚠ Flags an error **before** DNS records are added to the zone.

ℹ Information can or cannot be added

🗨 Talk to you in natural language?

CheckMate, a dynamic Zone file checker

# CheckMate - Model



# CheckMate - A.I Concepts



CheckMate leverages three core A.I pillars to deliver intelligent DNS analysis:



## Retrieval Augmented Generation (RAG)

The zone file as its primary data input for grounded responses.



## Large Language Model (LLM)

Provides the foundational DNS domain knowledge required for complex reasoning.



## Prompt Engineering

User questions in natural language.

# CheckMate - LLM



CheckMate integrates two distinct Large Language Model (LLM) architectures:



## 1) NotebookLM

RAG-based AI assistant that uses Google's Gemini under the hood to provide grounded, source-specific insights.



## 2) Anthropic Claude

Custom integration that processes zone files and natural language prompts directly using Anthropic Claude as the reasoning engine.

# CheckMate - Prompts



CheckMate utilizes two primary categories of prompts for DNS analysis:

## 1) Informational

Standard queries designed to retrieve specific DNS configuration details or general domain knowledge.

## 2) Error-checking

Diagnostic prompts used to identify inconsistencies, misconfigurations, or potential issues within the zone file.

# CheckMate - Informational Scenario



## Prompt

Can I add a record "hello.testwild.pallavitest.com" pointing to a different target than wildcard "\*.testwild.pallavitest.com"?  
answer in 2 lines

# CheckMate - Informational Scenario (NotebookLLM)

salesforce

Can I add record "hello.testwild.pallavitest.com" pointing to a different target than wildcard "\*.testwild.pallavitest.com"? answer in 2 lines

Yes, you can add a record for `hello.testwild.pallavitest.com` that points to a different target.

A specific record will **take precedence over the wildcard** `*.testwild.pallavitest.com`, which is currently configured to point to [www.pallavitest.com](http://www.pallavitest.com).

1 Sources  
Informational Scenario

# CheckMate - Error-checking Scenario



## Prompt

if I add NS delegation for `label1C.pallavitest.com`, will it cause resolution issue for any record within the zone file. Give me exact answer in 2 lines

# CheckMate - Error-checking Scenario

## (Notebook LLM)

if I add NS delegation for `labelC.pallavitest.com`, will it cause resolution issue for any record within the zone file.  
Give me exact answer in 2 lines

- Yes, adding an NS delegation at `labelC.pallavitest.com` **will cause resolution issues** for any existing records in the `pallavitest.com` zone file that are subdomains of `labelC.pallavitest.com`.

Specifically, records like `labelA.labelB.labelC.pallavitest.com` will no longer be resolved by the `pallavitest.com` name servers and must be re-created on the new delegated servers.

# CheckMate - Demo



**DEMO**

*Interactive Walkthrough*

# Key takeaways



## Integrations

- Software vendors can add optional configs for LLM integration.
- DNS providers can provide this service to their customers.

## Benefit

**NO more DNS related outages**

# Thank you



## Q&A