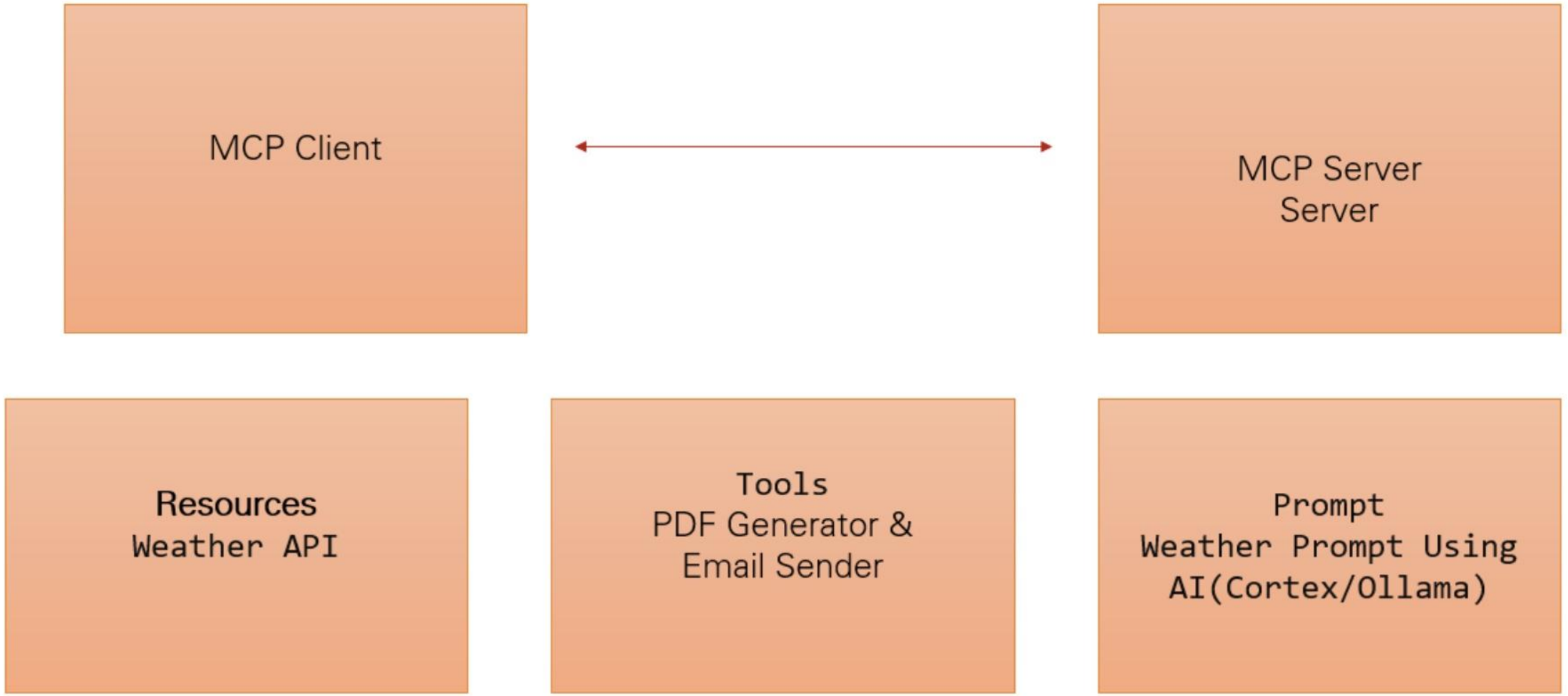
AI agent to mail Weather report

The Five Components of MCP

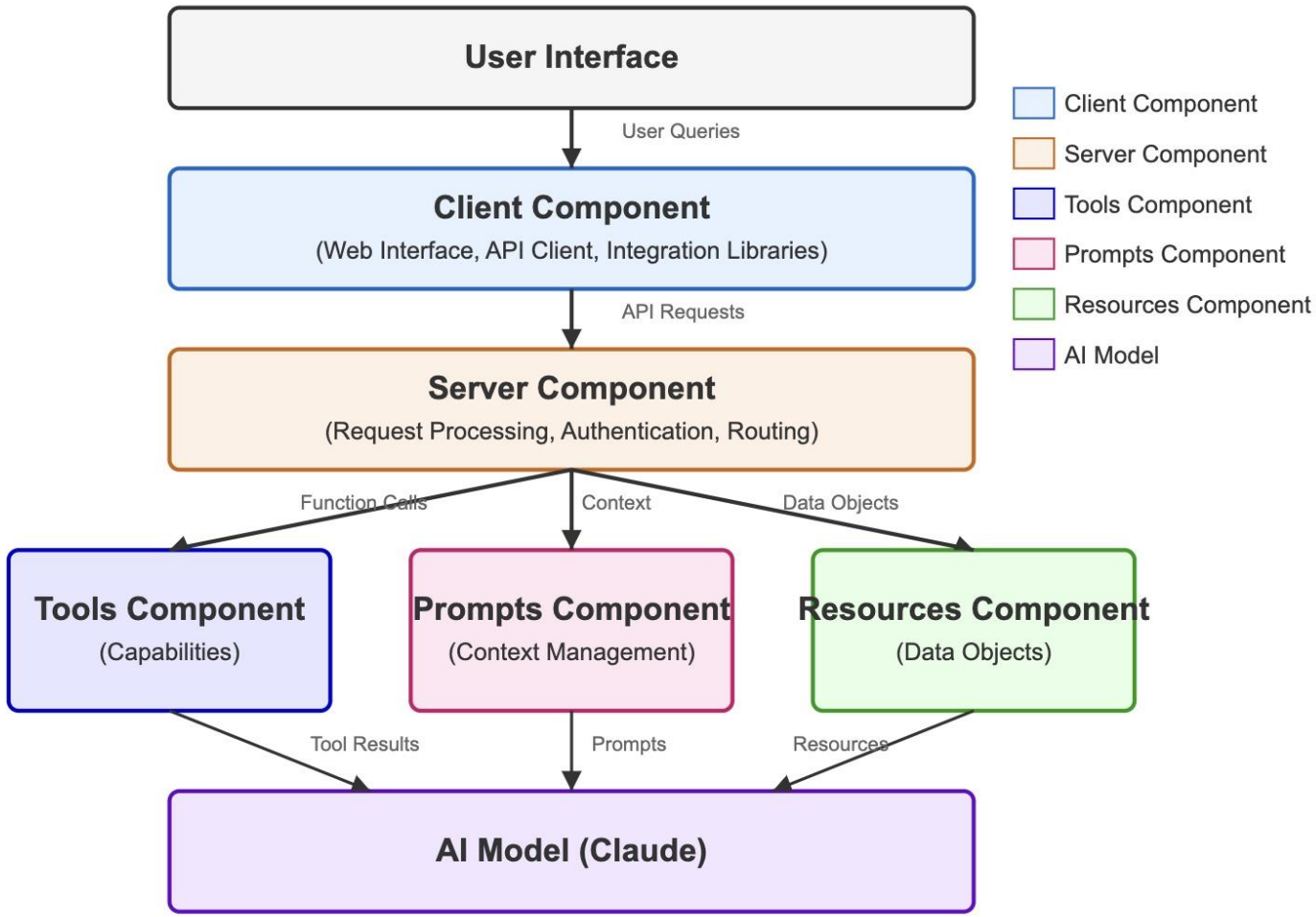
The Model Context Protocol architecture consists of five key components:

1. **Client**: Orchestrates workflow and manages user interactions
2. **Server**: Processes requests and manages API endpoints
3. **Tools**: Provides specialized functional capabilities
4. **Prompts**: Structures interactions with AI models
5. **Resources**: Defines standardized data objects and interfaces


MCP Client
MCP Server
Server
Resources
Weather API
Tools
PDF Generator &
Email Sender
Prompt
Weather Prompt Using
AI(Cortex/Ollama)

Anthropic

Anthropic's Model Context Protocol Architecture



- **Client**
- **Purpose**: Orchestrates the application workflow and user experience
- **Responsibilities**:
- Manages user interactions
- Coordinates between components
- Handles application lifecycle
- Provides user interface elements
- Maintains session state

- **Server**
- **Purpose**: Processes requests and manages AI system endpoints
- **Responsibilities**:
- Provides API endpoints
- Handles authentication and authorization
- Routes requests to appropriate components
- Manages rate limiting and quota enforcement
- Handles error conditions and responses

- **Tools**
- **Purpose**: Provides specialized capabilities for specific tasks
- **Responsibilities**:
- Implements domain-specific functionality
- Performs specialized computations
- Handles external service integrations
- Processes structured data transformations
- Executes actions in external systems

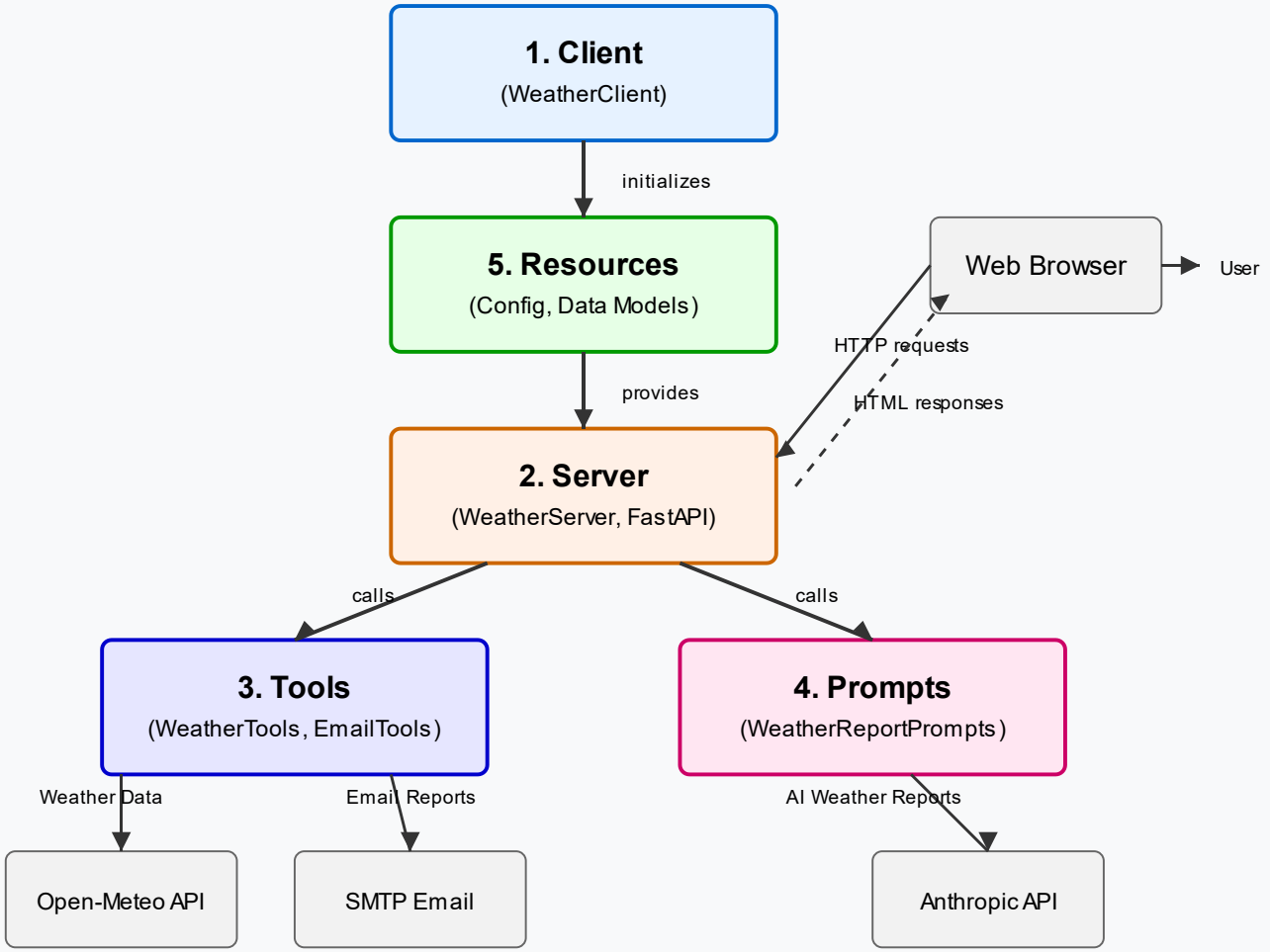
- **Prompts**
- **Purpose**: Structures interactions with AI models
- **Responsibilities**:
- Formats user inputs for model consumption
- Manages context windows and history
- Applies system prompts and guardrails
- Handles output formatting and parsing
- Implements prompt chaining and refinement

- **Resources**
- **Purpose:** Defines standardized data objects and interfaces
- **Responsibilities:**
- Provides data schema definitions
- Ensures consistent data representation
- Manages configuration parameters
- Handles resource validation
- Facilitates resource sharing between components

MCP Server Capabilities

- **Powering Next-Generation AI Integration**
- The Model Context Protocol Server provides a comprehensive framework for building extensible, secure, and scalable AI systems with dynamic component integration.
- **Core Integration Capabilities**
- **Tool Registry:** Dynamic integration of specialized functional components with versioning and validation
- **Resource Registry:** Centralized management of data sources and providers with access control
- **Prompt Registry:** Template-based AI model interactions with optimization and analytics
- **Orchestration Engine:** Complex multi-step workflows with parallel execution and error handling
- **Security Framework:** Fine-grained permissions, audit logging, and sandboxed execution
- **Scaling Architecture:** Horizontal scaling with load balancing and performance monitoring

Weather Forecast Application - MCP Architecture



Weather Forecast App

Get accurate 5-day weather forecasts for any location worldwide

New York Search

Try searching for cities like "New York", "London", "Tokyo", or "Sydney"

New York, New York

United States

Monday, March 17, 2025 09:01 PM

Search New Location

☁️ **38.9°F**

Feels like 30.6°F

Overcast

Humidity: 77%

Wind: 10.6 mph

Precipitation: 0.0 in

Pressure: 1008 hPa

Today's Hourly Forecast

09 PM	10 PM	11 PM
☁️	☁️	☀️
38.9°F	37.1°F	36.2°F
0%	0%	0%

5-Day Forecast

Monday

Mar 17

Moderate rain

High: **58.3°F** Low: **36.2°F**

Precipitation: 14.7 in
UV Index: 2.7

Tuesday

Mar 18

Overcast

High: **55.7°F** Low: **31.6°F**

Precipitation: 0.0 in
UV Index: 5.7

Wednesday

Mar 19

Overcast

High: **52.3°F** Low: **36.3°F**

Precipitation: 0.0 in
UV Index: 5.8

Thursday

Mar 20

Moderate drizzle

Friday

Mar 21

Heavy snow fall

Weather Report

Good morning, New York City! I hope you're staying warm and cozy on this chilly, overcast day. Currently, the temperature is sitting at around 39°F, but with the wind chill, it feels more like a brisk 31°F out there. Make sure to bundle up if you're heading outside!

Looking ahead at the 5-day forecast, we've got quite an interesting week in store. Today, expect moderate rain with a whopping 14.7 inches of precipitation - you might want to break out those rain boots and umbrellas! Temperatures will be milder, with a high of 58°F and a low of 36°F.

As we move into Tuesday and Wednesday, the rain will take a break, but the overcast skies will stick around. Temperatures will cool off a bit, with highs in the low to mid 50s and lows dipping down to the low to mid 30s.

Thursday brings a chance of some moderate drizzle, with about an inch of precipitation expected. Temperatures will be a bit cooler, with a high just under 50°F and a low in the low 40s.

Now, here's where things get really interesting - Friday is looking like a winter wonderland! Heavy snowfall is expected, with an impressive 22 inches of snow in the forecast. Temperatures will be cold, with a high of 49°F and a low of 31°F. If you've got any outdoor plans for Friday, you might want to reschedule or make sure you're prepared for some serious snow!

As always, make sure to stay tuned to your local weather updates for any changes in the forecast. In the meantime, stay warm, stay safe, and enjoy the cozy vibes of this chilly New York City week!

Get this report in your email

Weather report has been sent to your email successfully!

Email address

name@example.com

Send Report

Email Output

Weather Report

Monday, March 17, 2025

Good morning, Delhi! It's shaping up to be a beautiful day in our vibrant city. Currently, the temperature is a pleasant 61.4°F (16.3°C), and with the clear sky, it's the perfect weather for a morning stroll or a cup of chai outdoors. The humidity is a bit high at 78%, but a gentle breeze of 2.7 mph (4.3 km/h) keeps the air feeling fresh.

Looking ahead at the 5-day forecast, it seems like we're in for a delightful week. Temperatures will gradually rise, with highs reaching the mid-80s°F (around 30°C) by the weekend. While Tuesday will be partly cloudy, the rest of the week is expected to be mainly clear or overcast, providing a nice mix of sunshine and shade.

The great news is that there's no precipitation in sight for the entire week! This means it's an excellent time to plan outdoor activities, such as picnics at Lodhi Gardens or exploring the historical sites around the city.

- **1. Client Component**
- **Purpose**: Orchestrates the application workflow
- **Responsibilities**:
- Initializes all other components
- Creates and manages resources
- Sets up and configures the application
- Starts the web server

- **2. Server Component**
- **Purpose**: Handles HTTP requests and API endpoints
- **Responsibilities**:
- Defines API routes
- Processes user requests
- Coordinates between tools and templates
- Returns appropriate responses

- **3. Tools Component**
- **Purpose**: Provides specialized functional components
- **Responsibilities**:
- Weather data retrieval and processing
- Email functionality
- Performs core business logic operations

- **4. Prompts Component**
- **Purpose**: Manages AI model interactions
- **Responsibilities**:
- Structures AI prompts
- Handles AI request/response
- Provides fallback functionality
- Generates weather reports

- **5. Resources Component**
- **Purpose**: Defines data models with standardized interfaces
- **Responsibilities**:
- Manages configuration
- Provides data structures
- Ensures consistent data representation

- **Application Flow**
- **User Request**:
  - User enters location in web interface
- **Server Processing**:
  - Server receives request via /search endpoint
  - Calls WeatherTools to get coordinates
- **Data Retrieval & Processing**:
  - WeatherTools fetches data from Open-Meteo API
  - Tools process and structure the data
- **AI Report Generation**:
  - Prompts component generates weather report
  - Uses Claude API or falls back to local generation
- **Response Delivery**:
  - Server renders HTML template with processed data
  - User receives complete weather forecast

- **Benefits of MCP Architecture**
- **Improved Maintainability**:
  - Single-responsibility components
  - Clear separation of concerns
  - Easier to update individual components
- **Enhanced Testability**:
  - Components can be tested in isolation
  - Dependencies can be easily mocked
  - More comprehensive test coverage
- **Better Scalability**:
  - New features added by extending specific components
  - Minimal impact on existing functionality
  - Modular structure allows selective scaling
- **Clear Dependency Management**:
  - Explicit and well-defined dependencies
  - Dependency injection throughout architecture
  - Reduced coupling between components

Next stage

- Make this AI agent fully automated and add more tools and resources to it
- Get a full large picture on MCP use cases which we can use .
- Make a MCP server where we can add or delete tools and resources.

Thank You