React Native 0.74+ Architecture Guide

# 1. Performance Improvements with TurboModules & Fabric

React Native 0.74+ enables TurboModules and Fabric by default. These new systems dramatically improve runtime performance and architectural clarity by eliminating the old bridge.

## TurboModules

TurboModules allow direct communication between JavaScript and native modules via JSI. This means faster calls, better memory efficiency, and on-demand loading of modules.

Example TurboModule declaration in TypeScript:

interface MyTurboModule extends TurboModule {  
 getValue(key: string): Promise<string>;  
}

Example usage:

import { TurboModuleRegistry } from 'react-native';  
  
const MyModule = TurboModuleRegistry.getEnforcing<MyTurboModule>('MyModule');  
MyModule.getValue('exampleKey').then(value => console.log(value));

## Fabric

Fabric is React Native's concurrent-ready rendering engine. It provides a more direct and synchronous rendering path with improved layout and gesture responsiveness.

Sample Fabric component structure:

export const MyNativeComponent = requireNativeComponent('MyNativeView');

# 2. Simplified Architecture with the New Codegen System

React Native's codegen system auto-generates native bindings from JavaScript interface files. This removes boilerplate and provides type safety across the JS <-> Native boundary.

Define a native module in TypeScript:

// MyModule.ts  
export interface Spec extends TurboModule {  
 multiply(a: number, b: number): number;  
}

Register the module:

import codegenNativeComponent from 'react-native/Libraries/Utilities/codegenNativeComponent';  
  
export default codegenNativeComponent<Spec>('MyModule');

# 3. Improved Hermès Engine Integration

Hermès is a lightweight JavaScript engine optimized for mobile. React Native 0.74+ improves Hermès by making it default and optimizing for faster startup and smaller memory footprint.

Hermès Benefits:

- Faster cold start times (30%+ improvement)  
- Lower memory usage (up to 50%)  
- Improved garbage collection  
- Smaller JS bundle sizes

Enable Hermès in `android/app/build.gradle`:

project.ext.react = [  
 enableHermes: true // <- Make sure this is true  
]

Hermès is now default for Android and optional (but supported) for iOS.