Overview of Android: Middleware Infrastructure Layers

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1. Understand key elements in Android’s middleware infrastructure
   - e.g., hardware abstraction layer, Android runtime, & native libraries

Middleware infrastructure resides atop the OS & below the apps et al
Overview of Android’s Middleware Infrastructure
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    - Shields Android stack from low-level hardware details
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  - Hardware abstraction layer
    - Shields Android stack from low-level hardware details
    - Shields OEMs from GNU Public License “virality”

See [en.wikipedia.org/wiki/Linux_kernel#Licensing_terms](en.wikipedia.org/wiki/Linux_kernel#Licensing_terms)
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  - Hardware abstraction layer
  - Runtime & libraries layer

This layer is composed of several middleware elements
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    - Android runtime
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A managed execution environment that efficiently runs Java-based apps & some Android system services

See [source.android.com/devices/tech/dalvik](source.android.com/devices/tech/dalvik)
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This managed execution environment is optimized for mobile device constraints

See [sites.google.com/site/io/dalvik-vm-internals](sites.google.com/site/io/dalvik-vm-internals)
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A copy of core Java class libraries & core Android class libraries

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We’ll discuss Java threading shortly
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Android’s core libraries provide key components that we’ll also cover shortly
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Android’s core libraries provide many other UI & persistence components
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See www.coursera.org/specializations/android-app-development
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Android—like Java—balances run-time performance & developer productivity
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Android’s core libraries are often implemented as wrapper facades

See [www.dre.vanderbilt.edu/~schmidt/PDF/wrapper-facade.pdf](http://www.dre.vanderbilt.edu/~schmidt/PDF/wrapper-facade.pdf)
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    - Native C/C++ libraries

*These Java wrapper façade are implemented via native C/C++ code*

See [developer.android.com/tools/sdk/ndk](https://developer.android.com/tools/sdk/ndk)
End of Overview of Android: Middleware Infrastructure Layers