

Device Firmware Reversing to Obtain the Screen Mirroring Protocol

! Extend your device compatibility list and provide advanced features – having exact device functioning description !

The Client Task

The client's product supports a well-known popular mobile device platform that includes functionality of video mirroring from the device screen to the external screen. Basically, this feature works only with the platform-compatible devices as a target screen.

The client needed to extend the video mirroring feature to support external screens operating on other platforms. The problem was how to make those different platforms understand each other while the sources and APIs of the streaming hardware platform are closed.

Research Task

To perform screen/video mirroring, devices establish secure connection with public/private key exchange. Apriorit researchers formulated the task to reverse engineer device firmware and reconstruct the handshaking mechanism with key exchange.

Working On

The process of handshaking discovered to be rather complicated and securely protected, with a lot of undocumented functions involved. Apriorit specialists researched the protocol and reversed the corresponding methods step-by-step.

The process of authentication was the combination of RTSP handshaking and HTTP handshaking stages with several keys generation.

Results

After 10 man-weeks, the Apriorit Research and Reverse Engineering Group implemented a prototype that performed a full handshaking process with the original platform-based device.

Researched techniques allowed the client's team to implement the functionality of the screen/video mirroring for a wide range of devices. Device screen recording is now on their roadmap, as the research results gave all the required information for that.

What's next?

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