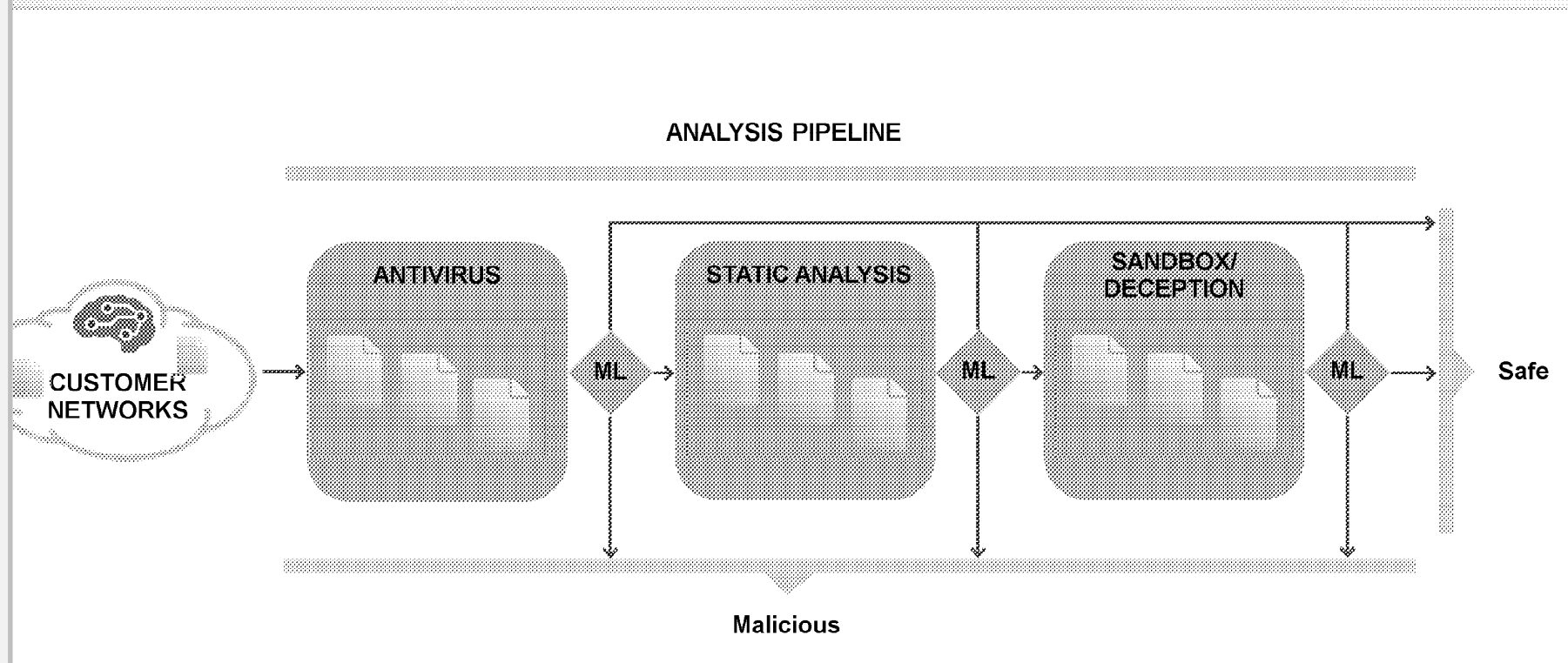


Sky ATP Analysis Pipeline



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Speaker Notes for Slide 1

o, how does Argon use ML? What classification decisions are we making?

essentially we want to decide, for each sample, whether it's malicious or not. We accomplish this by funneling samples through Argon's ANALYSIS PIPELINE. As samples flow through the pipeline, we process them in a number of ways to generate metadata which helps us to classify the samples.

Currently samples can be analyzed by an antivirus adapter, two static analysis adapters, and a sandbox+deception adapter. Based on the metadata generated by these adapters our ML models form an estimate of the probability that a given sample is malicious.

However, it costs us more the longer a sample remains in the pipeline since the latter stages take more time to compute, so we build ML models which can try to classify a sample at each stage where new metadata is available. At each stage the VERDICT ENGINE will basically say, "this is safe; stop scanning", "this is malware; stop scanning and block it", or "not sure; continue analyzing the sample."

Adapter flow

- The different 'adapters' produce results of varying fidelity.
- In order to deliver verdicts with high efficacy we build statistical models (ML) to interpret and combine the results at different stages of the analysis pipeline.
- This also allows us to optimize our resource usage: if we have enough evidence that a file is either malicious or benign at some intermediate stage of the pipeline we can '**early exit**' and save the cost of full analysis.

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Antivirus Medley: all submitted file types

- Every submitted sample gets the AV treatment.
- We have a relatively simple model to interpret the results from 6 engines; the result is more or less that if a sample hits a couple trusted AVs (or several less trusted AVs) then we believe that it's malware.
- **Early exit:** If a sample is identified to be malicious by the AV adapter, further processing isn't strictly necessary.
- However, we may continue to analyze the sample in order to obtain more information either to inform the customer of the malware's behavior or for purposes of internal efficacy tracking/improvement.

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Static Analysis: win7 exe; pdfs; doc[x]

- We use both internally-developed static analysis (fast) and vendor-sourced static analysis (slow, exe only)
- The results of the analyses are evaluated by ML models to determine (1) if a sample is so obviously malicious or benign that we can stop scanning it, or (2) if we should proceed to sandboxing.
- **Early exit:** If a verdict can be confidently determined at this stage, we may either mark the sample as 'done' or proceed to sandboxing anyway in order to collect additional information.
- We collect a large amount of information, including things like "this executable appears to contain code to make API calls secretly", or "this document contains obfuscated VBA", but we do not provide this information to the customer.

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