Appunti sul modello delle Policy

Autor1, Autor2

I. Anomalies

A. "Competence" of rules

In general, anomalies arise when two rules $r_x = (c_x, a_x)$ and $r_y = (c_y, a_y)$ have condition sets that overlaps for some access ($c_x \not\perp c_y$). However, in some cases these anomalies are not effective as some other rule (r_z) can "shadow" r_x or r_y, so that the actual anomaly should be considered with r_z.

For instance, in the inter-policy case, given a specific access *acc* and two matching rules $r_x = (c_x, a_x), r_y = (c_y, a_y)$ belonging to different policies $r_x \in \pi_x.R, r_y \in \pi_y.R$, we *do not* have a conflict if it exists a rule $r_z = (c_z, a_z)$ in $\pi_x.R$ such that $c_z \succ c_x$ and $pri(r_z) > pri(r_x)$. In this case, r_x will not be applied and, as a consequence, the anomaly between r_x and r_y will not be relevant.

In this case we say that r_x is *not the competent rule* for *acc* in π_x.

Given a condition c_z, we define r_i as being the competent rule for the policy π_i ($C_{\pi_i}(r_i, c_z)$) as:

$$C_{\pi_i}(r_i, c_z) \Leftrightarrow c_i \geq c_z \wedge$$
$$\nexists r_x = (c_x, a_x) \in \pi_i.R | c_x \geq c_z \wedge pri(r_x) > pri(r_i)$$

We can define the "global" competent rule r_i for c_z as in the following:

$$C_g(r_i, c_z) \Leftrightarrow c_i \geq c_z \wedge$$
$$\nexists \pi_x \in \Pi | r_x \in \pi_x.R, c_x \geq c_z \wedge \pi_x.w \rhd^+ \pi_i.w \wedge C_{\pi_x}(r_x, c_z)$$

Given these definitions, we can assert that: "an anomaly is potential if both rules are *not* globally competent, otherwise the anomaly is effective".

The great advantage of this definition is that it provides a mean to evaluate the anomalies that are worth analysing and solving, ignoring those that will not be effective.

Autor1 are with the ...., Corso Duca degli Abruzzi 24, I-10129 Torino, Italy; e-mail: {first.last}@.....