Given S, a finite set of security groups, the language our mechanism operates on can be generated by a context free grammar. This grammar can be generated in two steps:

First, we define the base grammar:

$G^1 = (V^1, \Sigma^1, R^1, \alpha)$

$V^1 = \{\alpha, W\}$

$\Sigma^1 = \{\emptyset\}$

$R^1 = \{\alpha \to \varepsilon, S \to W\alpha | W\}$

Second, we generate the S specific rules: