

**A Unifying Petri Net Model of  
Non-Interference and Non-Deducibility  
Information Flow Security**

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In this paper we introduce FIFO Information Flow Nets (FIFN) as a model for describing information flow security properties. The FIFN is based on Petri nets and has been derived from the work described in [Var89], [Var90] and [Rou86].

Using this new model, we present the information flow security properties Non-Interference between Places (which corresponds to Non-Interference) and Non-Deducibility on Views (which corresponds to Non-Deducibility on Inputs).

Then we consider a very general composition operation and show that neither Non-Interference on Places nor Non-Deducibility on Views is preserved under this composition operation.

This leads us to a new definition of information flow security referred to as the Feedback Non-Deducibility on Views. We then show that this definition is preserved under the composition operation. We then show some similarities between this property and the notion of Non-Deducibility on Strategies.