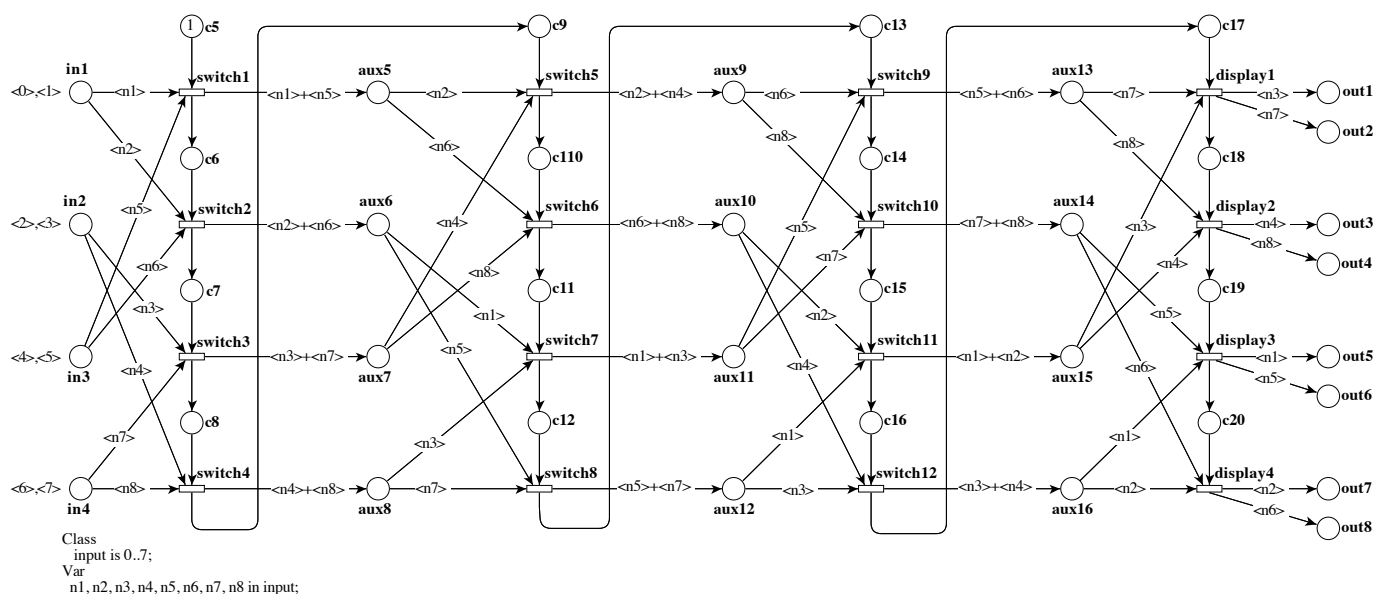


## Introduction

This Model form is a short description of the Permutation admissibility in multistage interconnection networks model that comes, for the Model Checking Contest @ Petri Nets, with: a set of PNML files, a set of properties to be checked (possibly one file per model instance) and an optional set of properties concerning the model (invariants, etc. – possibly one file per model instance). For Coloured Nets, equivalent PNML P/T net files are proposed too.

## Permutation admissibility in multistage interconnection networks



## Presentation

**Description:** The model describes a  $8 \times 8$  4 stages shuffle-exchange network. In order to ease readability, the net components are grouped in columns similar to the way the switches are arranged in stages. Thus, whole net is represented as a cascade of columns alternating in type of the components being either place or transition. Transitions occur column-wise from the leftmost to the rightmost and in columns from the topmost to the bottommost. It can be easily seen that no token can visit a place more than once. Direction of the arcs indicates the flow of tokens through the net.

Here, we consider the scaling parameter  $N$  as a multiplier for the initial marking in places  $\text{in}(x)$  and  $\text{c5}$ . The figure shows the model when  $N = 1$ .

**Origin:** R. Bashirov, F. Kordon, and H. Lort. Exploiting colored Petri nets to decide on permutation admissibility. *Acta Informatica*, 46(1):43–55, February 2009.

Scaling parameter

Name	Description	Values
N	Multiplier for the marking of places $\text{in}(x)$ and $\text{c5}$	1, 2, 5, 10, 20, 50

## Information about the Model

Data on the Model

Number of places	Number of transitions	Number of arcs	Scaling parameter value
40	16	83	1, 2, 5, 10, 20, 50

### Stated Properties

safe	✓	free choice	✗	event graph	✗
deadlock	✓	state machine	✗	reversible	✗

### Other Properties (not mandatory)