Development of Network Description Language
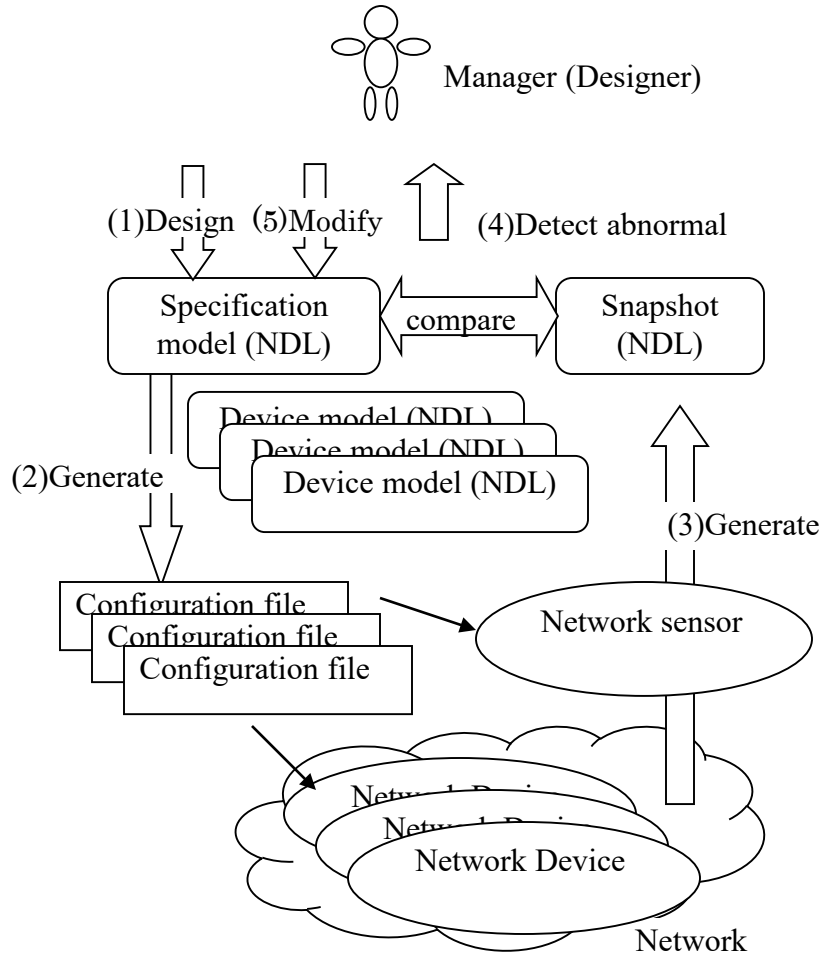
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Proposed flow of Network Lifecycle Management.

Manager (Designer)

(1)Design (5)Modify (4)Detect abnormal

Specification model (NDL) — compare → Snapshot (NDL)

Device model (NDL)
Device model (NDL)
Device model (NDL)

(2)Generate

(3)Generate

Configuration file
Configuration file
Configuration file

Network sensor

Network Device
Network Device
Network Device

Network

Content：
 To reduce administrative cost, we proposed Network Description Language (NDL) for Network Lifecycle (design, configuration and monitoring) Management. The administrator only writes Network Specification by NDL, configuration files for individual Network Devices automatically generated from Specification.
 NDL is XML (Extensible Markup Language) based Language. It have four elements, Network Node, Agent, Link, Flow, and describe three models, Specification model, Device model and Snapshot.
 This Figure shows the proposed flow of Network Lifecycle Management. We explain as follows, (1) Create Network Specification model, (2) Generate Configuration files automatically from Specification model and apply it to individual devices, by using XSL (Extensible Stylesheet Language), (3) Generate snapshot representing the current state of network by Network Sensor, (4) Detect unknown devices and/or flows by Comparison of Specification model and Snapshot. Do something if these are illegal devices and/or flows, (5) Modify Specification (i.e. add new devices and/or flows) if there are regal devices and/or flows.

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