

网络、通信与安全

基于Boosting算法的入侵检测

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摘要 提出了一种新颖的基于boosting BP 神经网络的入侵检测方法。为了提高BP神经网络的泛化能力, 采用改进的Boosting方法, 进行网络集成。Boosting方法采用更有效的参数求解方法, 即弱分类器的加权参数不但与错误率有关, 还与其对正样本的识别能力有关。对“KDD Cup 1999 Data”网络连接数据集进行特征选择和归一化处理之后用于训练神经网络并仿真实验, 得到了较高的检测率和较低的误报率, 仿真结果表明, 提出的入侵检测方法是有效的。

关键词 [入侵检测](#) [Boosting方法](#) [BP神经网络](#)

分类号

Intrusion detection based on boosting method

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Abstract

A novel method is proposed for intrusion detection based on improved boosting BP neural network. In order to improve the precision of the BP neural network for intrusion detection, the improved boosting algorithm is used to build an integration-neural network. The improved boosting adopts a new method to acquire parameters; the weighted parameters of weak classifiers are determined not only by the error rates, but also by their abilities to recognize the positive samples. Simulated experiments with KDD Cup 1999 network connections data which have been preprocessed with methods of features selection and normalization have shown that the proposed is effective for intrusion detection owing to excellent performance of the higher attack detection rate with lower false positive rate.

Key words [intrusion detection](#) [Boosting method](#) [BP neural network](#)

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