入侵检测系统部署实验报告

班级：　　学号：　　姓名：

一、实验名称

二、实验目的

理解入侵检测系统的结构和工作原理

掌握入侵检测系统 snort 部署方法

掌握基本的 snort 规则编写方法

三、实验内容与要求

构建一个基于 Windows 平台的入侵检测系统

入侵检测系统 snort

后台数据库

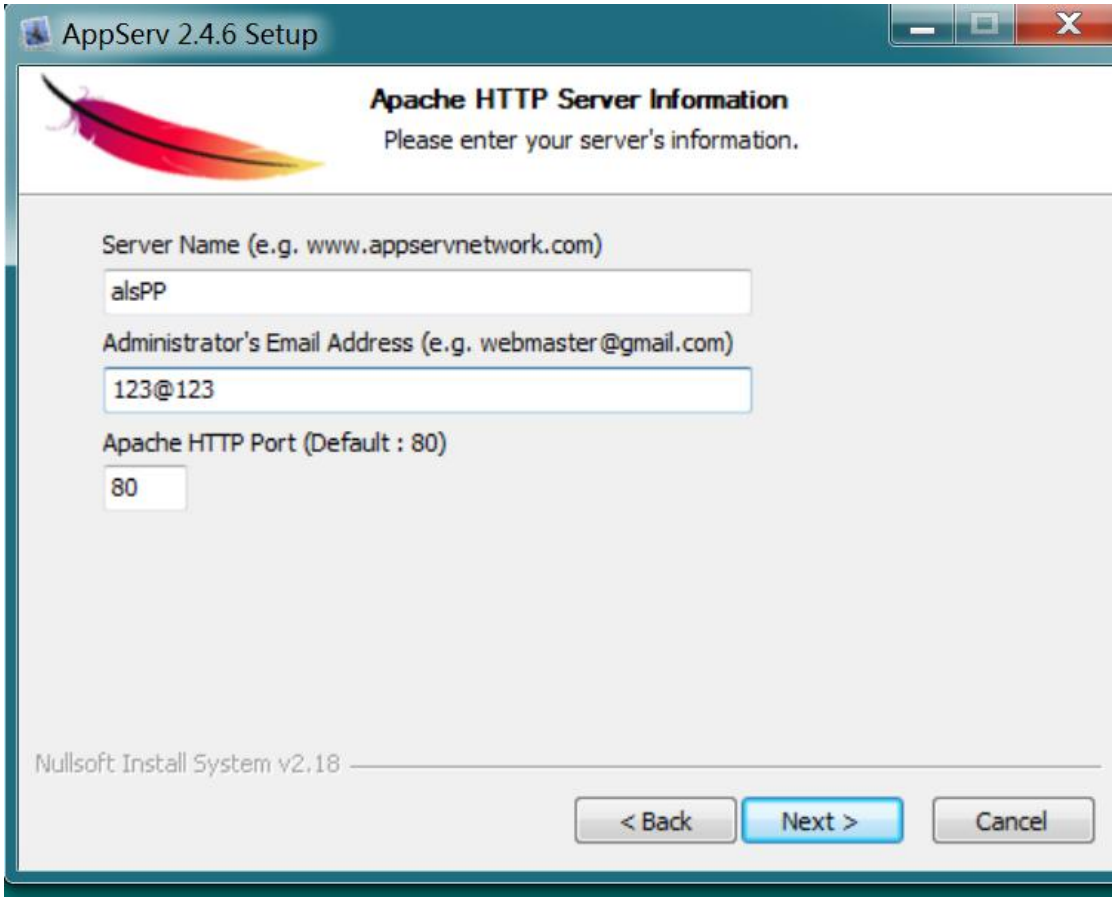
前端图形化分析显示

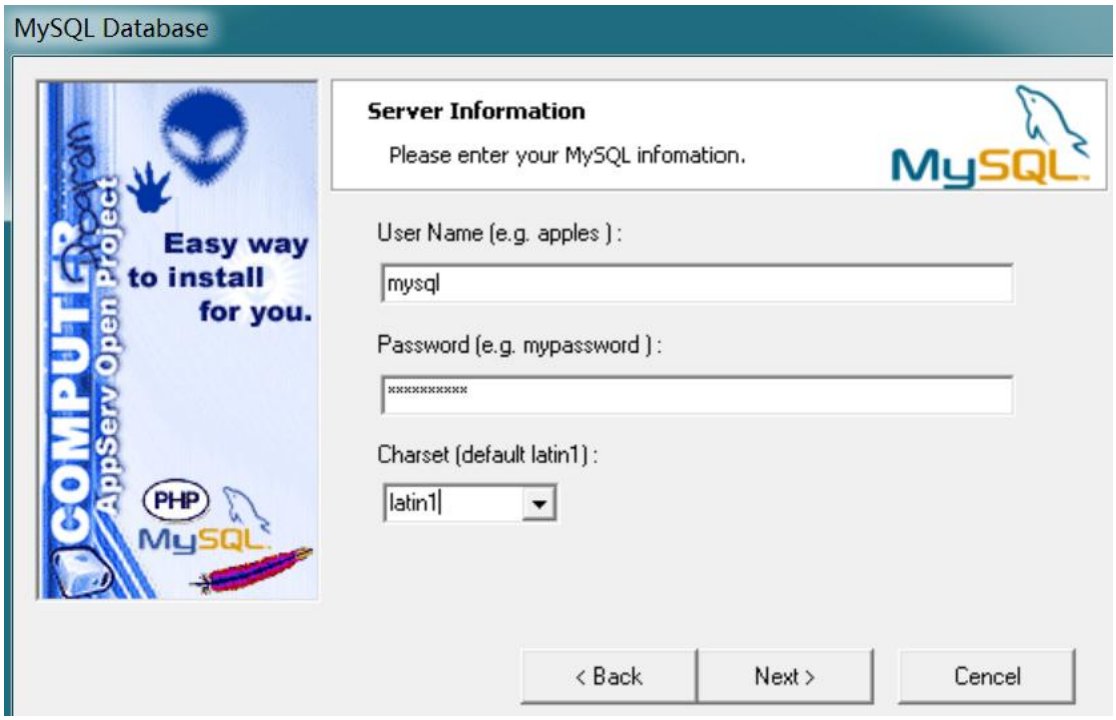
设计几条 snort 入侵检测规则，测试检测结果

四、实验过程

实验的详细步骤，过程

- WinPcap_3_0.exe(数据包捕获)
- Snort_2_3_0_Installer.exe (入侵检测系统)
- appserv-win32-2.4.1.exe (快速建立 Apache/PHP/MySQL)





- acid-0.9.6b23.tar.gz (入侵检测数据库分析控制台)
- adodb461.zip (PHP 数据库链接库)
- jpgraph-1.17.tar.gz (图形链接库 For PHP)

AppServ 安装成功

Snort 数据库脚本执行成功


192.168.121.131 >> localho...
页面(P)
phpMyAdmin
数据库:
snort (16)
snort
data
detail
encoding
event
icmphdr
iphdr
opt
reference
reference_system
schema
sensor
sig_class
sig_reference
signature
tcphdr
udphdr
服务器: localhost
数据库
状态
变量
权限
进程
导出
添加新用户
登入信息
用户名:
使用文本域:
SnortUser
主机:
任意主机
密码:
使用文本域:
重新输入:
全局权限
注意: MySQL 权限名称会以英文显示
全选
全部不选
数据
结构
管理
SELECT
INSERT
UPDATE
DELETE
FILE
CREATE
ALTER
INDEX
DROP
CREATE TEMPORARY TABLES
GRANT
SUPER
PROCESS
RELOAD
SHUTDOWN
SHOW DATABASES
LOCK TABLES
REFERENCES
EXECUTE
REPLICATION CLIENT
REPLICATION SLAVE
资源限制
注意: 将这些选项设为 0 (零)将删除限制。
MAX QUERIES PER HOUR
0
MAX UPDATES PER HOUR
0
MAX CONNECTIONS PER HOUR
0
执行

用户 'SnortUser'@'%' - 数据库 snort

- 编辑权限

按数据库指定权限

注意：MySQL 权限名称会以英文显示

全选 全部不选

数据		结构		管理	
☑	SELECT	☑	CREATE	☑	GRANT
☑	INSERT	☑	ALTER	☑	LOCK TABLES
☑	UPDATE	☑	INDEX	☑	REFERENCES
☑	DELETE	☑	DROP		
		☑	CREATE TEMPORARY TABLES		

执行

- 按表指定权限

表	权限	授权	按列指定权限	操作
无				

在下列表添加权限： 使用文本域: 执行

分配权限成功

- 按数据库指定权限

数据库	权限	授权	按表指定权限	操作	
snort	ALL PRIVILEGES	是	否	编辑	收回

在下列数据库添加权限： 使用文本域: 执行

配置 acid，修改完后打开 http://localhost/acid/acid_db_setup.php 报错

Warning: Call-time pass-by-reference has been deprecated - argument passed by value; If you would like to pass it by reference, modify the declaration of [runtime function name](). If you would like to enable call-time pass-by-reference, you can set allow_call_time_pass_reference to true in your INI file. However, future versions may not support this any longer. in **c:\appserv\www\acid\acid_state_citems.inc** on line **1181**

Warning: Call-time pass-by-reference has been deprecated - argument passed by value; If you would like to pass it by reference, modify the declaration of [runtime function name](). If you would like to enable call-time pass-by-reference, you can set allow_call_time_pass_reference to true in your INI file. However, future versions may not support this any longer. in **c:\appserv\www\acid\acid_state_citems.inc** on line **1216**

Warning: Call-time pass-by-reference has been deprecated - argument passed by value; If you would like to pass it by reference, modify the declaration of [runtime function name](). If you would like to enable call-time pass-by-reference, you can set allow_call_time_pass_reference to true in your INI file. However, future versions may not support this any longer. in **c:\appserv\www\acid\acid_state_citems.inc** on line **1216**

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Warning: Call-time pass-by-reference has been deprecated - argument passed by value; If you would like to pass it by reference, modify the declaration of [runtime function name](). If you would like to enable call-time pass-by-reference, you can set allow_call_time_pass_reference to true in your INI file. However, future versions may not support this any longer. in **c:\appserv\www\acid\acid_state_citems.inc** on line **1250**

Warning: Call-time pass-by-reference has been deprecated - argument passed by value; If you would like to pass it by reference, modify the declaration of [runtime function name](). If you would like to enable call-time pass-by-reference, you can set allow_call_time_pass_reference to true in your INI file. However, future versions may not support this any longer. in **c:\appserv\www\acid\acid_state_citems.inc** on line **1351**

Warning: Call-time pass-by-reference has been deprecated - argument passed by value; If you would like to pass it by reference, modify the declaration of [runtime function name](). If you would like to enable call-time pass-by-reference, you can set allow_call_time_pass_reference to true in your INI file. However, future versions may not support this any longer. in **c:\appserv\www\acid\acid_state_citems.inc** on line **1351**

ACID DB Setup

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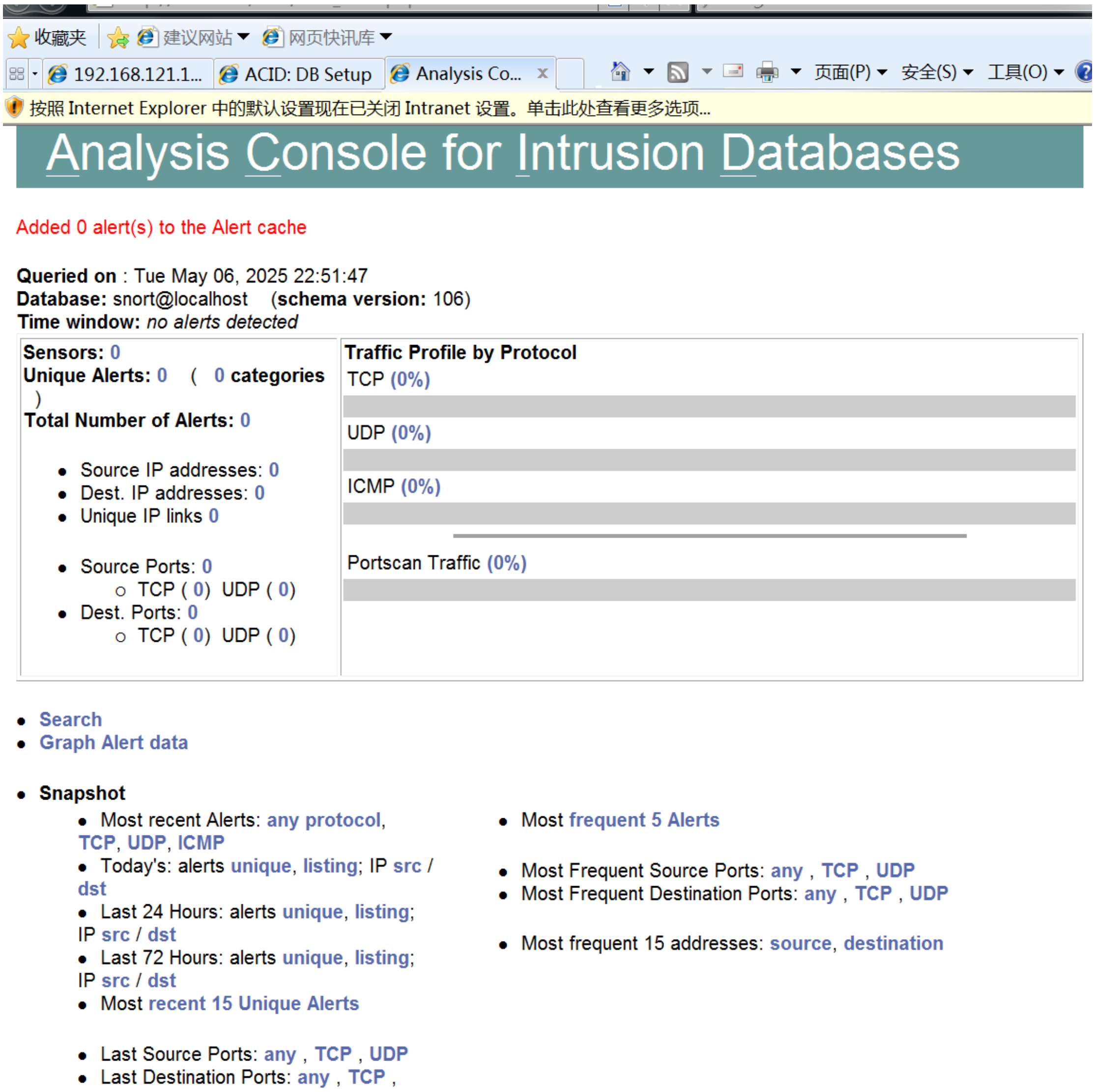
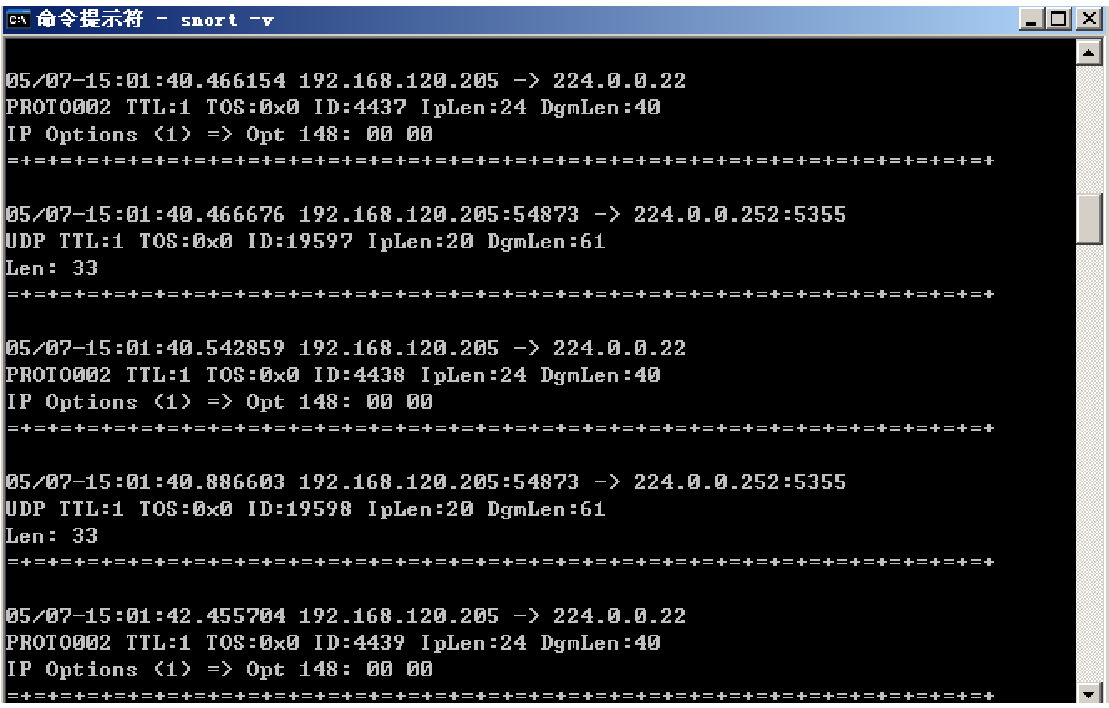
Error loading the DB Abstraction library: from "C:\AppServ\www\acid\adodb.inc.php"

Check the DB abstraction library variable `$DBlib_path` in `acid_conf.php`

The underlying database library currently used is ADODB, that can be downloaded at http://php.weblogs.com/adodb



收藏夹
建议网站
网页快讯库
192.168.121.1...
ACID: DB Setup
Analysis Co...
页面(P)
安全(S)
工具(O)
按照 Internet Explorer 中的默认设置现在已关闭 Intranet 设置。单击此处查看更多选项...
Analysis Console for Intrusion Databases
Added 0 alert(s) to the Alert cache
Queried on : Tue May 06, 2025 22:51:47
Database: snort@localhost (schema version: 106)
Time window: no alerts detected
Sensors: 0
Unique Alerts: 0 (0 categories)
Total Number of Alerts: 0
Source IP addresses: 0
Dest. IP addresses: 0
Unique IP links 0
Source Ports: 0
TCP (0) UDP (0)
Dest. Ports: 0
TCP (0) UDP (0)
Traffic Profile by Protocol
TCP (0%)
UDP (0%)
ICMP (0%)
Portscan Traffic (0%)
Search
Graph Alert data
Snapshot
Most recent Alerts: any protocol, TCP, UDP, ICMP
Today's: alerts unique, listing; IP src / dst
Last 24 Hours: alerts unique, listing; IP src / dst
Last 72 Hours: alerts unique, listing; IP src / dst
Most recent 15 Unique Alerts
Last Source Ports: any , TCP , UDP
Last Destination Ports: any , TCP ,
Most frequent 5 Alerts
Most Frequent Source Ports: any , TCP , UDP
Most Frequent Destination Ports: any , TCP , UDP
Most frequent 15 addresses: source, destination



命令提示符 - snort -v
05/07-15:01:40.466154 192.168.120.205 -> 224.0.0.22
PROTO002 TTL:1 TOS:0x0 ID:4437 IpLen:24 DgmLen:40
IP Options (1) => Opt 148: 00 00
=+
05/07-15:01:40.466676 192.168.120.205:54873 -> 224.0.0.252:5355
UDP TTL:1 TOS:0x0 ID:19597 IpLen:20 DgmLen:61
Len: 33
=+
05/07-15:01:40.542859 192.168.120.205 -> 224.0.0.22
PROTO002 TTL:1 TOS:0x0 ID:4438 IpLen:24 DgmLen:40
IP Options (1) => Opt 148: 00 00
=+
05/07-15:01:40.886603 192.168.120.205:54873 -> 224.0.0.252:5355
UDP TTL:1 TOS:0x0 ID:19598 IpLen:20 DgmLen:61
Len: 33
=+
05/07-15:01:42.455704 192.168.120.205 -> 224.0.0.22
PROTO002 TTL:1 TOS:0x0 ID:4439 IpLen:24 DgmLen:40
IP Options (1) => Opt 148: 00 00
=+

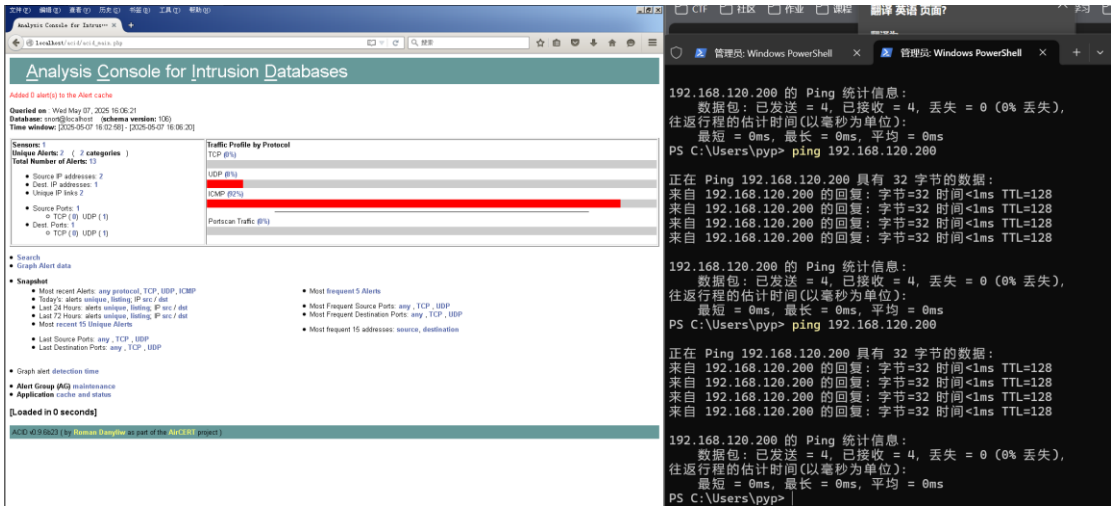
停止后拿到统计信息

```
Snort received 41 packets
    Analyzed: 41(100.000%)
    Dropped: 0(0.000%)
===================================================
Breakdown by protocol:
    TCP: 1           (2.439%)
    UDP: 10          (24.390%)
   ICMP: 0           (0.000%)
    ARP: 0           (0.000%)
  EAPOL: 0           (0.000%)
   IPv6: 20          (48.780%)
    IPX: 0           (0.000%)
  OTHER: 10          (24.390%)
DISCARD: 0           (0.000%)
===================================================
Action Stats:
ALERTS: 0
LOGGED: 0
PASSED: 0
---------------------------------------------------
```

五、实验结果分析

基于网络的入侵检测系统（NIDS）：监控网络流量，寻找已知的攻击模式或异常行为。

- 信息收集系统：收集系统、网络、数据及用户活动的状态和行为。
- 信息分析系统：分析收集到的信息，通过模式匹配、统计分析和完整性分析等技术手段检测入侵。
- 响应：根据检测结果采取相应的响应措施。



规则：

alert udp any any -> 192.168.164.131/24 1:1024 (msg:"UDP flow to low port";)

测试：

nc -u 192.168.164.131 123

alert tcp any any -> 192.168.164.131/24 1:1024 (msg:"TCP flow to low port";)
测试：

nc 192.168.164.131 80

alert tcp 192.168.164.131/24 any <> 192.168.164.131/24 23 (msg:"Telnet session detected";)
测试：

telnet 192.168.164.131

alert icmp 192.168.164.131/24 any -> 192.168.164.131/24 any (msg:"ICMP PING NMAP"; dsize:0; itype:8; reference:arachnids,162; classtype:attempted-recon; sid:469; rev:3;)
测试：

ping -c 1 -s 0 192.168.164.131

alert tcp any any -> 192.168.164.131/24 21 (content: "USER admin"; msg: "FTP admin login";

ftp 192.168.164.131

六、思考与心得体会