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閘道防禦

如何安全地開放內部資源予遠端用戶
如何快速建置閘道防禦工事，增強上網安全

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邁格行動有限公司

大綱 - I

- 如何安全地開放內部資源予遠端用戶
  - 遠端存取的安全需求
  - Microsoft IAG的遠端存取安全設計
    - 身分驗證
    - 用戶端安全檢測
    - 連線安全
    - 應用程式安全

大綱- II

- 如何快速建置閘道防禦工事，增強上網安全
  - 上網安全面面觀
  - 我已經有防火牆了，為何還需要ISA
  - 快速為ISA擴充防護機制 – GFI WebMonitor

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如何安全地開放內部資源予遠端用戶

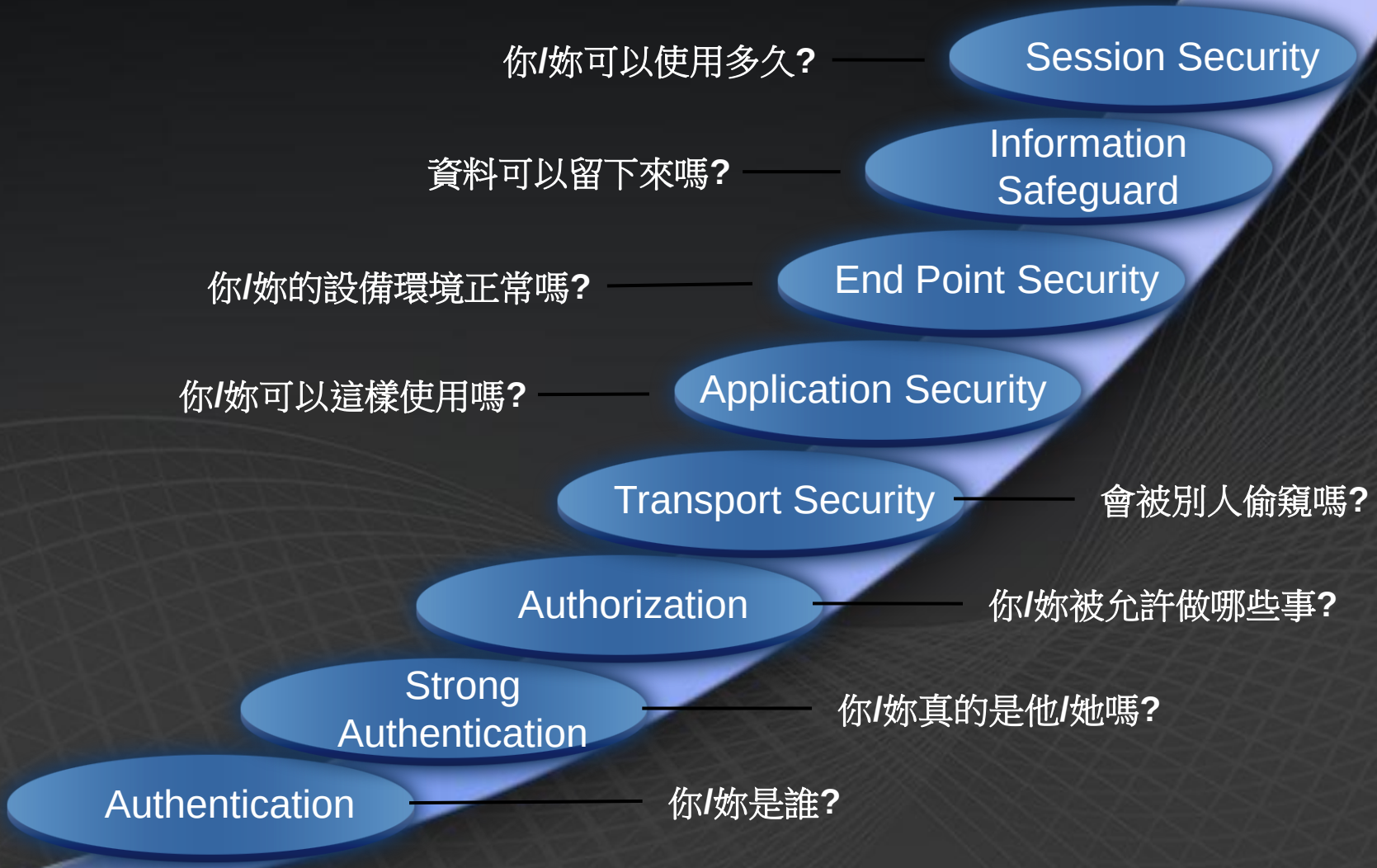
傳統遠端存取 IPSec VPN

- 優點
  - 架設簡單
- 缺點
  - 需要當地網路環境配合
  - 用戶端程式設定不易
  - 特定狀況會造成網路無法連通
  - 連線後的安全問題

Microsoft IAG 2007

- Intelligent Application Gateway
- IAG 是 SSL VPN
  - 支援任何類型應用程式，包括Web-enabled, client/server and legacy
    - HTTP APP: reverse proxy
    - Non-HTTP APP: Port/Socket forwarding、Network connector
- IAG 是 Web Application Firewall
  - 抵禦SQL injection, Cross Site injection等攻擊行為

遠端存取的安全需求


你/妳可以使用多久?
Session Security
資料可以留下來嗎?
Information Safeguard
你/妳的設備環境正常嗎?
End Point Security
你/妳可以這樣使用嗎?
Application Security
Transport Security
會被別人偷窺嗎?
Authorization
你/妳被允許做哪些事?
Strong Authentication
你/妳真的是他/她嗎?
Authentication
你/妳是誰?

IAG 安全設計

- 身分驗證與授權
- 用戶端安全檢測
- 連線安全
- 應用程式安全

身分驗證與授權

- IAG內建支援的認證來源
  - Active Directory, LDAP, RADIUS, WINHTTP…etc
- 可以設定多重認證來源，增強安全性
- 根據登入身分，授權應用程式存取
- Single Sign On

用戶端安全檢測

- 時機
  - 登入前, 應用程式執行前, 應用程式執行時
- 項目
  - 個人防火牆、防毒軟體…etc
  - 可自行增加檢測項目
    http://itgroup.blueshop.com.tw/ufgeorge/iag?n=convew&i=1162

連線安全

- 強制要求以FQDN連線
- 支援HTTP與HTTPS (HTTP Redirect HTTPS)
- Timeout設計
  - 無動作Timeout, 強制Timeout
- 連線結束自動清除本連線相關之快取
  - 登出時, 瀏覽器正常或異常關閉

應用程式安全

- Client – Server 應用程式
  - Port/Socket Forwarding 類型
  - Network Connector
- Web 應用程式

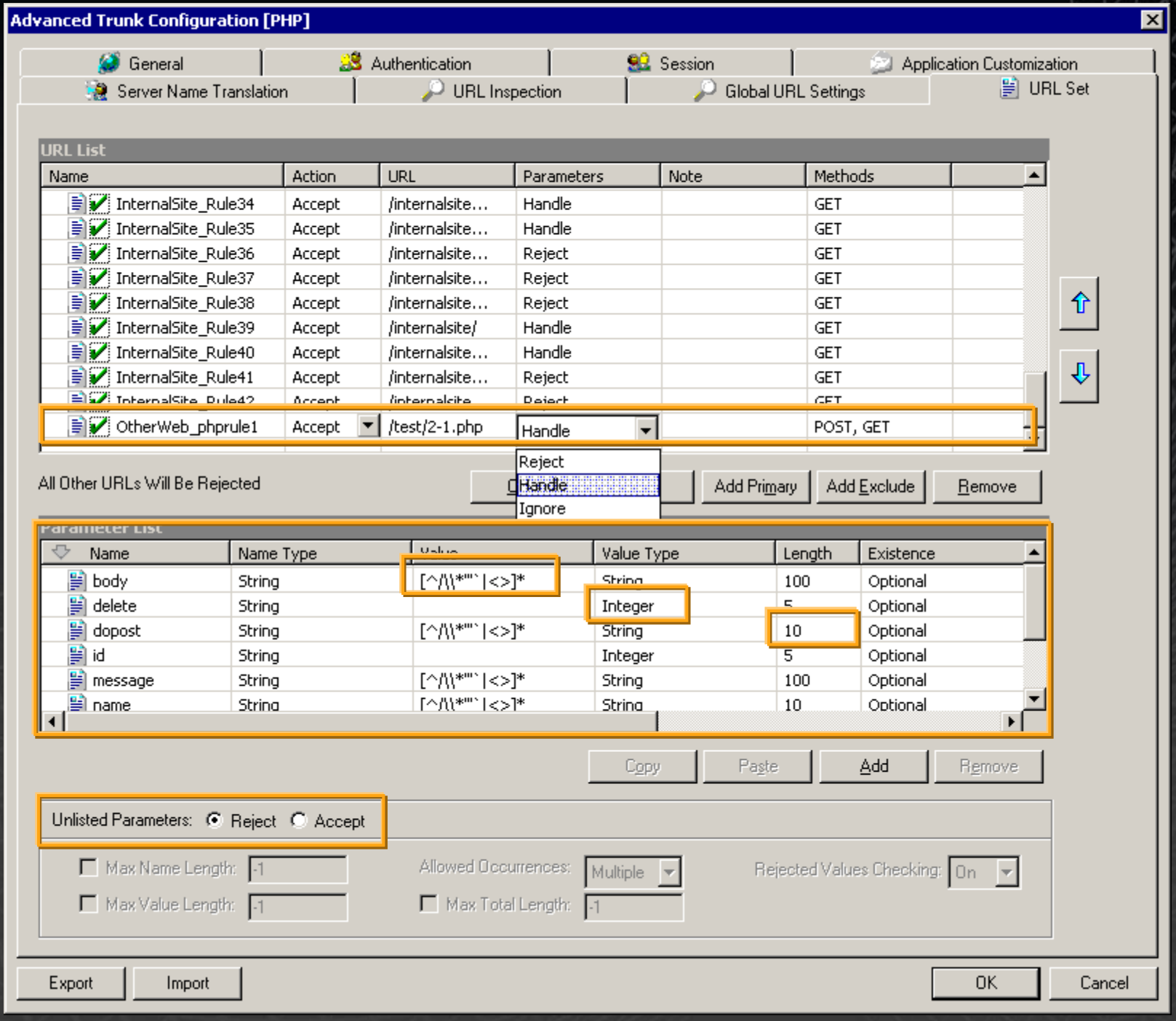
Client – Server 應用程式的安全

- Port/Socket Forwarding 應用程式僅針對用戶端特定Port/Socket流量導引至後端應用程式
  - 例如導引用戶端遠端桌面流量至特定伺服器之 port 3389 終端機服務
- Network Connector 開放 Layer 3 流量，但可限定導向至特定範圍之伺服器

  http://itgroup.blueshop.com.tw/ufgeorge/iag?n=convew&i=748

Web 應用程式的安全 -I

- 搭配事件導向規則的正向邏輯過濾引擎
- 可以使用的HTTP method
- 允許的URL
- 合法的URL與參數
- 危險字元的過濾


Advanced Trunk Configuration [PHP]
General
Authentication
Session
Application Customization
Server Name Translation
URL Inspection
Global URL Settings
URL Set
URL List
Name
Action
URL
Parameters
Note
Methods
InternalSite_Rule34 Accept /internalsite... Handle GET
InternalSite_Rule35 Accept /internalsite... Handle GET
InternalSite_Rule36 Accept /internalsite... Reject GET
InternalSite_Rule37 Accept /internalsite... Reject GET
InternalSite_Rule38 Accept /internalsite... Reject GET
InternalSite_Rule39 Accept /internalsite/ Handle GET
InternalSite_Rule40 Accept /internalsite... Handle GET
InternalSite_Rule41 Accept /internalsite... Reject GET
OtherWeb_phprule1 Accept /test/2-1.php Handle POST, GET
Reject
Handle
Ignore
All Other URLs Will Be Rejected
Add Primary
Add Exclude
Remove
Parameter List
Name
Name Type
Value
Value Type
Length
Existence
body String [^/*'"`|<>]* String 100 Optional
delete String Integer 5 Optional
dopost String [^/*'"`|<>]* String 10 Optional
id String Integer 5 Optional
message String [^/*'"`|<>]* String 100 Optional
name String [^/*'"`|<>]* String 10 Optional
Copy
Paste
Add
Remove
Unlisted Parameters: Reject Accept
Max Name Length: -1
Max Value Length: -1
Allowed Occurrences: Multiple
Max Total Length: -1
Rejected Values Checking: On
Export
Import
OK
Cancel

Web Application Firewall 技術分類

- 反向邏輯過濾
  - 如同防毒軟體一般，比對已知攻擊的各項特徵碼
- 正向邏輯過濾
  - 依據一份特徵表以允許符合的連線要求通過
- 動態規則過濾
  - 動態掃描每一個送出網頁的內容結構，藉此建立規則
- 搭配事件導向規則的正向邏輯過濾
  - 正向邏輯為主的過濾機制兼具多項動態過濾的優勢（並且避免大多數的缺點）

Web 應用程式的安全 -II

- Application Wrapper
  - 改變HTTP Response Header，避免資訊洩漏
  - 資訊遮罩與動態修改網頁內容
- Script Insert 攻擊與防禦
- SQL Injection 攻擊與防禦

強大的應用程式攻擊之防禦能力

- 可以防禦的攻擊技術類型
  - 參數竄改
  - 除錯設定
  - 緩衝區溢位
  - 編碼攻擊
  - 程式碼注入
  - 跨網站攻擊
  - 資料隱碼
  - 作業系統指令攻擊
  - 專屬通訊協定攻擊
  - 不適當的HTTP方法
  - 非預期的檔案上傳
  - 其他應用層攻擊

演練架構

- 代替原主機IP接受攻擊
- 沒有真的網站系統
- 沒有真的應用程式
- 強迫使用者利用網域名稱連接(domain name)

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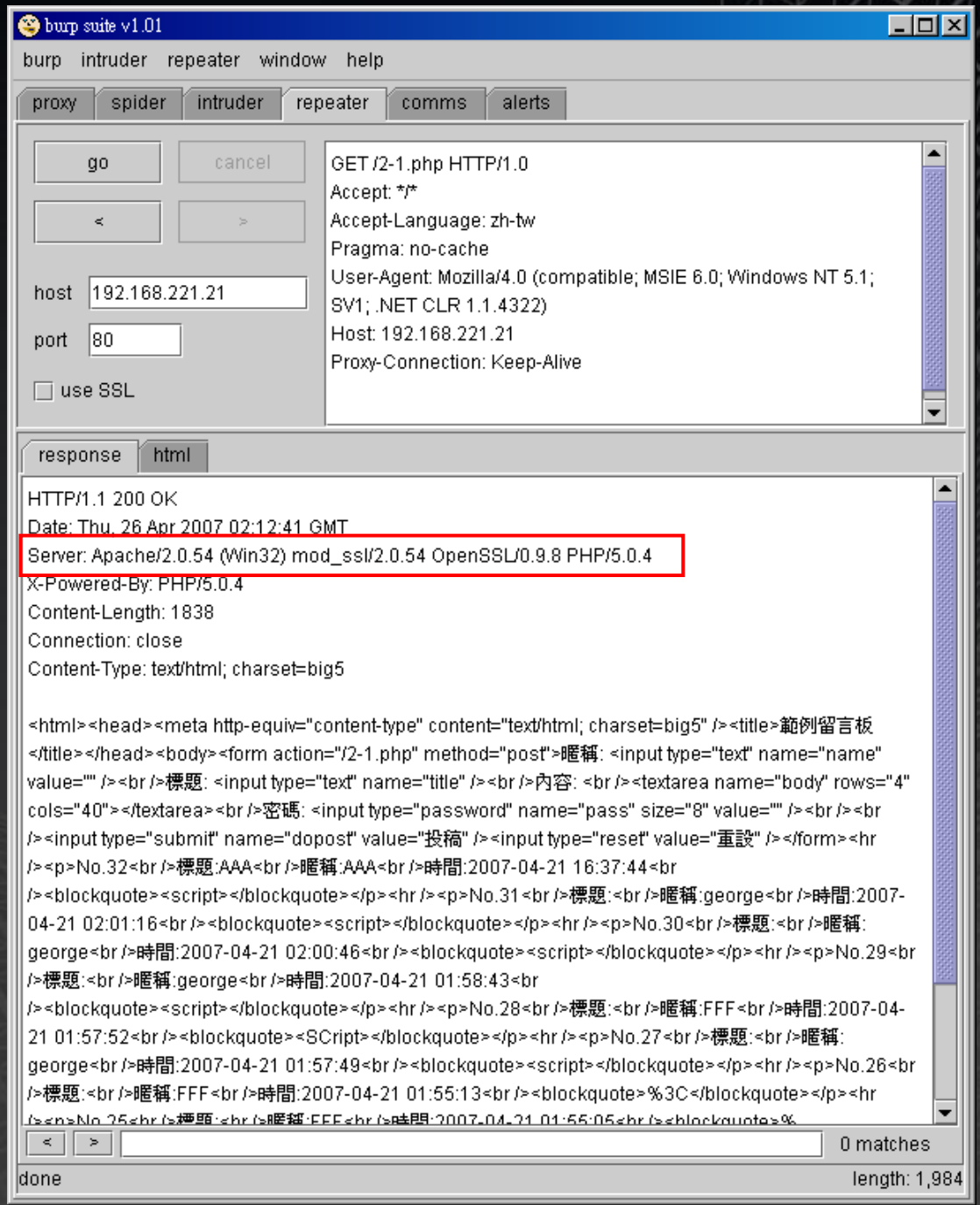
改變 Response Header 資訊
避免資訊洩漏

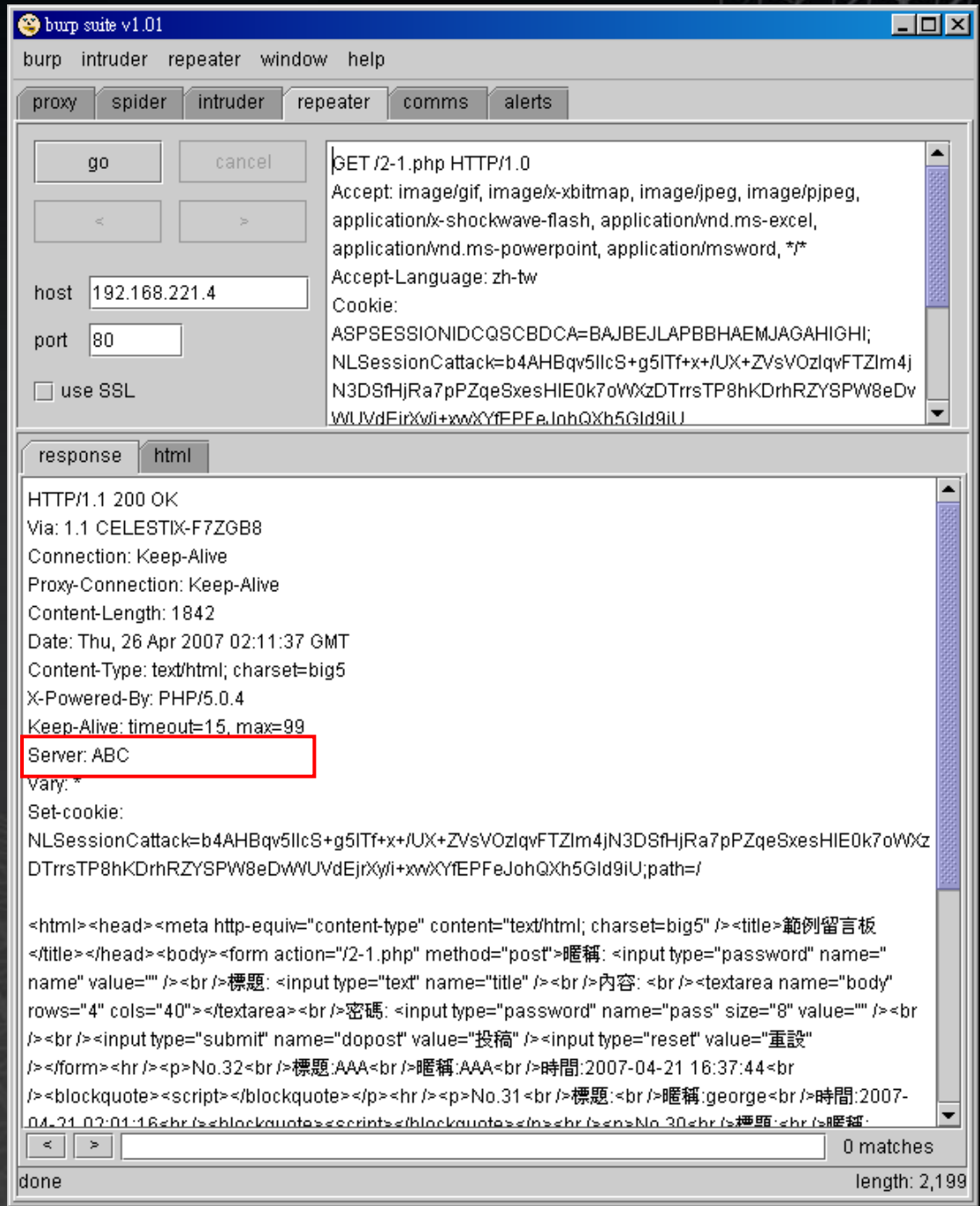
目的

- 外部駭客透過網頁之標頭(header)取得伺服器資訊
- 得知伺服器資訊後，即可藉由該伺服器種類之特有攻擊方式嘗試攻擊
- 隱藏特定資訊可以增加駭客攻擊的難度

- Client 端
- 直接連線 Web Server之網頁



- Client 端
- 透過 IAG 2007
- 連線網頁



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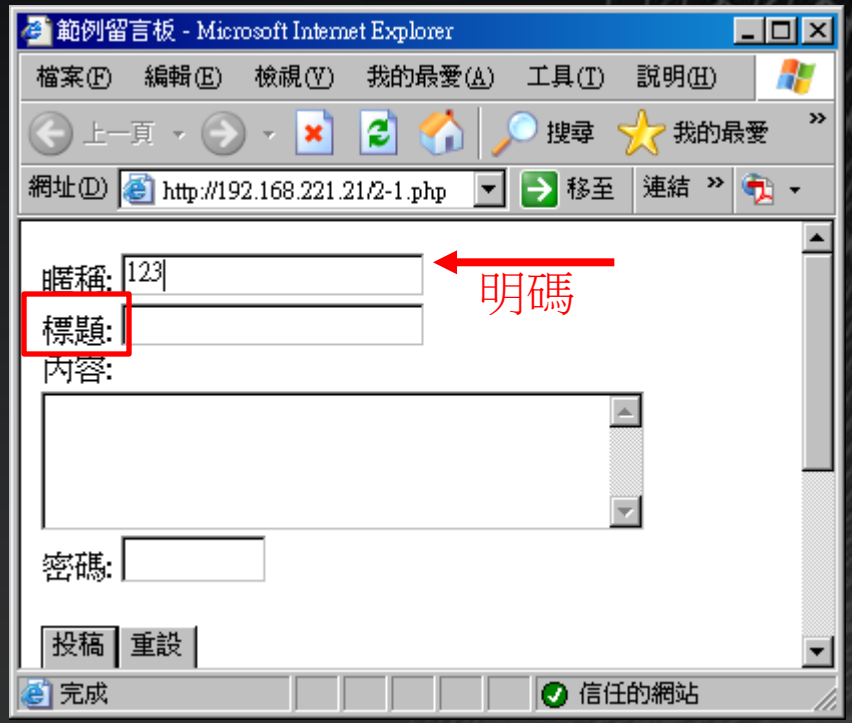
資訊遮罩
與 動態修改網頁內容

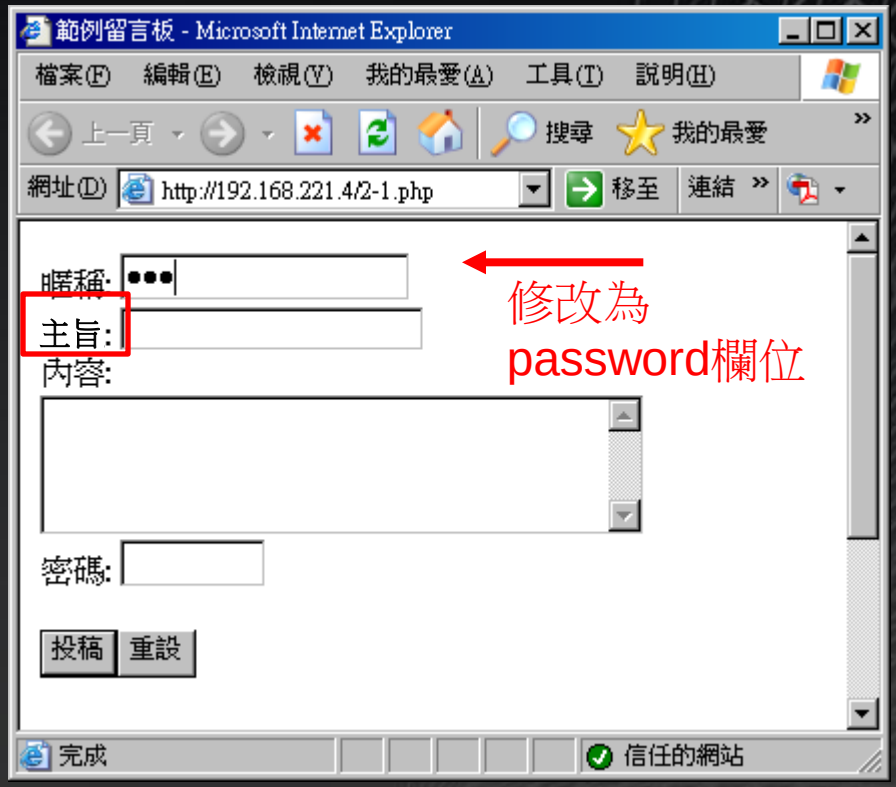
目的

- 透過 IAG 在 response 網頁前，動態修改網頁內容
- 原始 AP 程式不需做任何更動
- 通常用於
  - 將原本明碼輸入的文字欄位修改成隱碼方式輸入(例如身分證字號)
  - 隱藏部分連結，藉此限制員工由公司外使用時的功能，避免不必要的資訊暴露
  - 置換某些文字內容

- 原始網頁


範例留言板 - Microsoft Internet Explorer
檔案(F) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(H)
上一頁 搜尋 我的最愛
網址(D) http://192.168.221.21/2-1.php 移至 連結
暱稱: 123
標題:
內容:
密碼:
投稿 重設
明碼
完成
信任的網站

- 透過IAG 2007 瀏覽相同網頁



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Script Insert 攻擊

Script Insert 攻擊

- 攻擊手法: 利用網頁的輸入欄位，插入一段Script，當後人瀏覽相同網頁時，瀏覽器即會執行該Script
- 危害: Script Insert 本身並無危害，但若駭客利用Script將網頁導向至有害網頁，或透過Script竊取cookie後，搭配跨網站指令碼攻擊(通稱XSS)，就可以造成危害
- 例如
  - <script>location.href=“http://www.microsoft.com”;</script>

防禦概念

- 瀏覽器關閉Java Script 支援功能
- 程式碼輸出至瀏覽器前，先進行『HTML消毒』(不同程式語言有不同的消毒函式)
- 接收外部資料時，若知道資料型別，例如Integer，直接先行轉換；對於String型別，濾除不該出現的字及限制字數(限制在30字元通常即能有效防禦)

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SQL Injection 攻擊

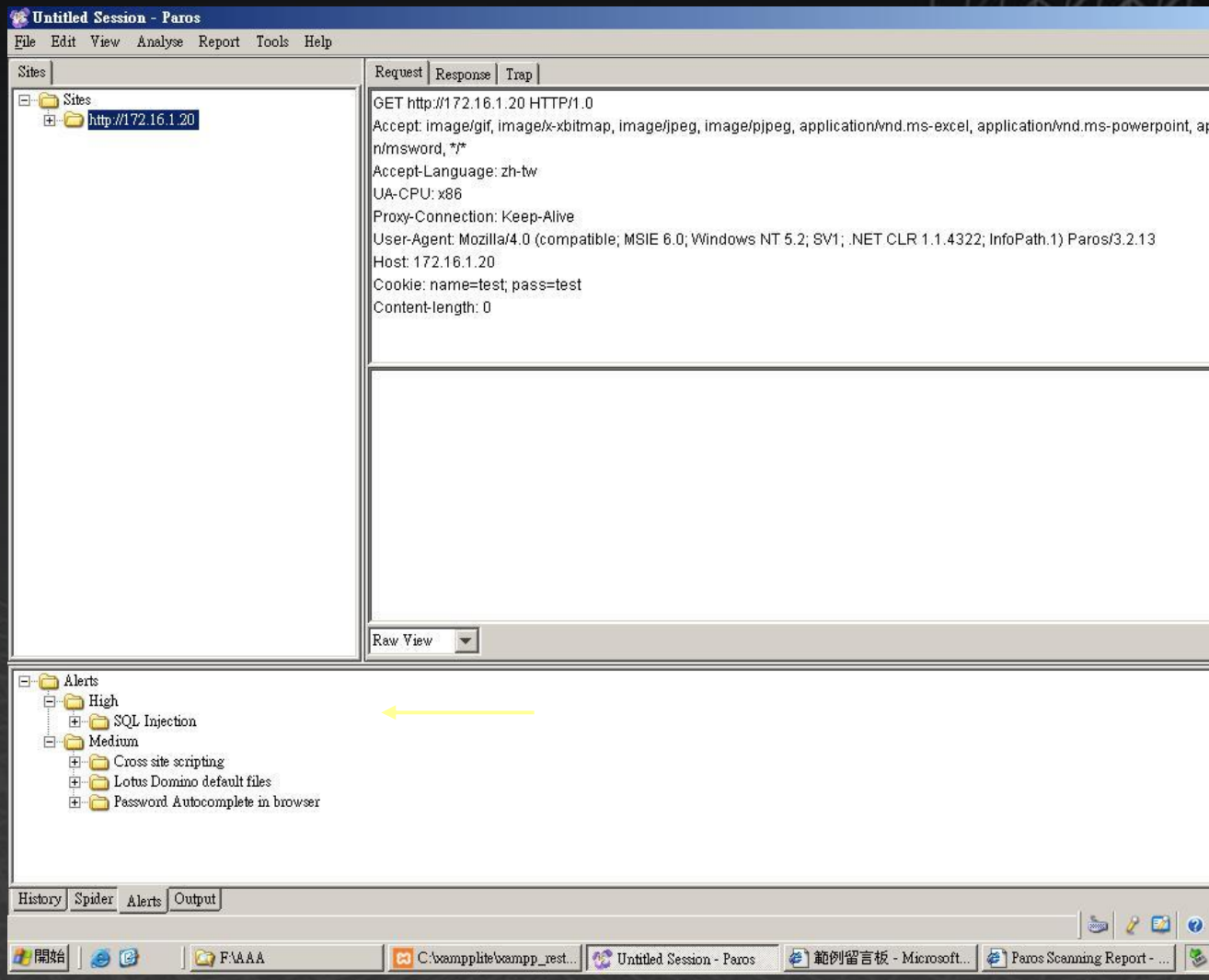
SQL Injection 攻擊

- 攻擊手法: 攻擊者直接使用危險的URI展開攻擊
- 危害:
  - 被進行任何資料庫操作
  - 被竊取密碼等資料
  - 資料篡改

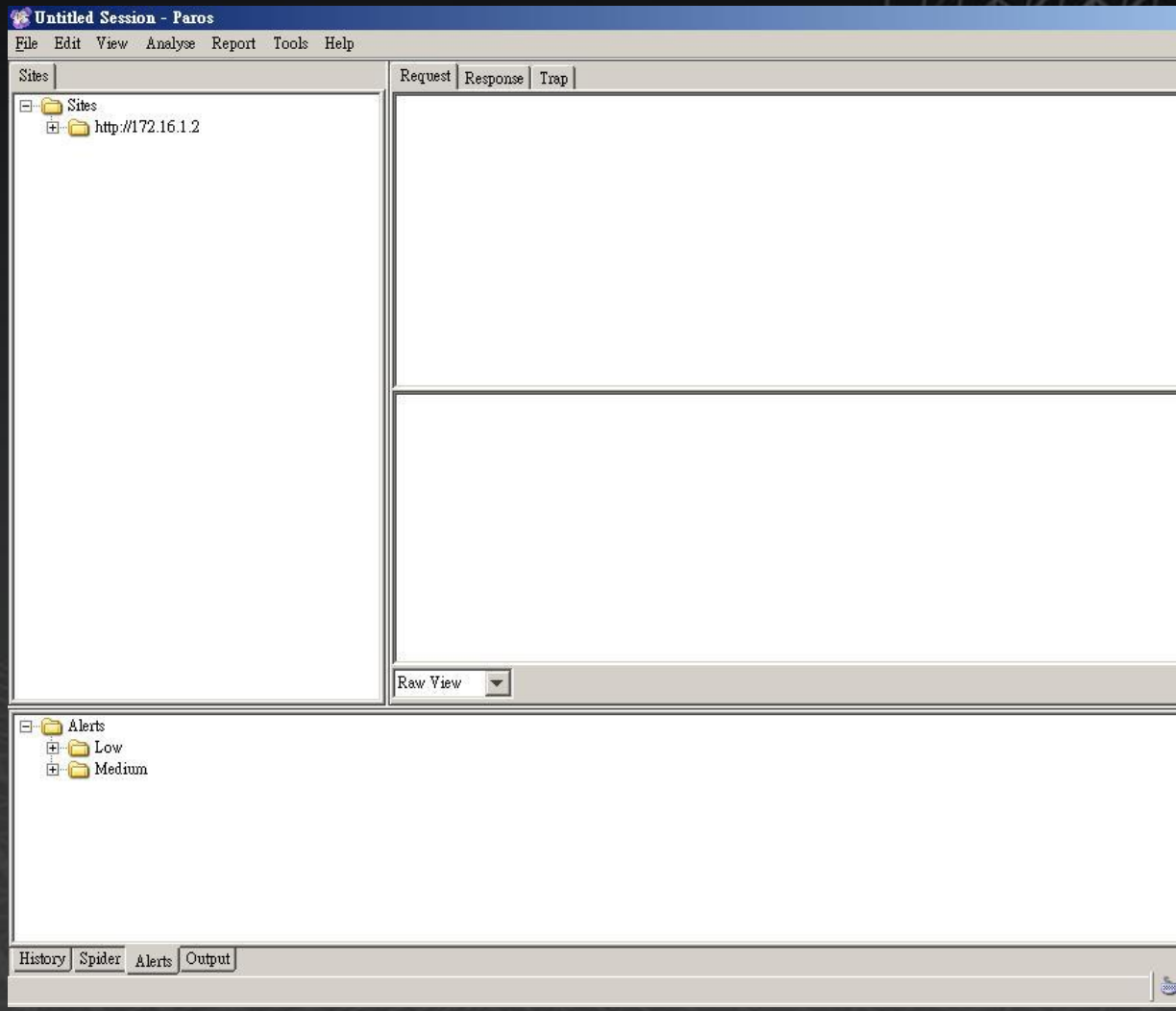
防禦概念

- 在任何Web AP產生SQL query的地方進行
  - 輸入資料型態檢查、資料長度檢查與資料內容檢查
- SQL Server 權限管理
- 妥善處理『’』、『”』等易造成SQL query跳脫之字元

- 以工具掃描原始網站


Untitled Session - Paros
File Edit View Analyse Report Tools Help
Sites
Sites
http://172.16.1.20
Request Response Trap
GET http://172.16.1.20 HTTP/1.0
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg, application/vnd.ms-excel, application/vnd.ms-powerpoint, ap
n/msword, */*
Accept-Language: zh-tw
UA-CPU: x86
Proxy-Connection: Keep-Alive
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.2; SV1; .NET CLR 1.1.4322; InfoPath.1) Paros/3.2.13
Host: 172.16.1.20
Cookie: name=test; pass=test
Content-length: 0
Raw View
Alerts
High
SQL Injection
Medium
Cross site scripting
Lotus Domino default files
Password Autocomplete in browser
History Spider Alerts Output
開始
F:\AAA
C:\xampplite\xampp_rest...
Untitled Session - Paros
範例留言板 - Microsoft...
Paros Scanning Report - ...

- 以工具掃描透過IAG 2007所保護的網站



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暫停一下

Microsoft IAG appliance – Celestix WSA

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如何快速建置閘道防禦工事增強上網安全

上網安全面面觀

- 為什麼上網是不安全的?
  - 下載的檔案安全嗎?
  - 連結的網站真實嗎?
  - 網站的內容安全嗎?
  - SSL保證安全嗎?

我已經有防火牆了，為何還需要ISA

- 傳統防火牆不會過濾上網的『內容』
- 傳統防火牆不會管理下載檔案的類型
- 傳統防火牆不能針對使用者設定上網規則
- 傳統防火牆沒有『代理』機制
- 傳統防火牆沒有『快取』設計

如何佈署ISA

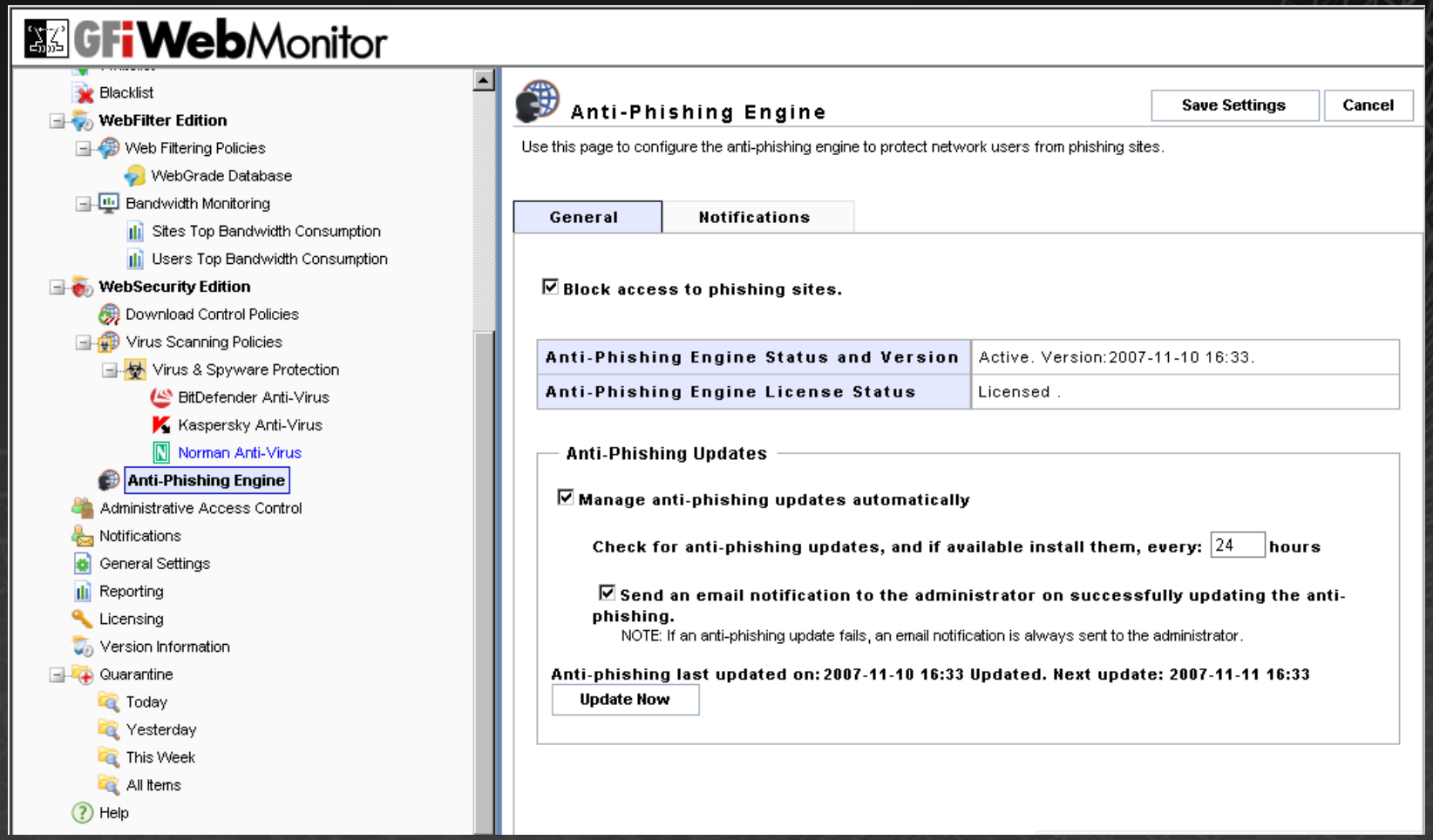
- Edge Firewall
- Back to Back Firewall
- Single NIC Proxy mode

- 從網路架構來看
  - 已經擁有『新型』的硬體防火牆做為邊界防火牆
    - 維持網路架構下提升使用者上網安全 – 單一網卡範本
    - 網路架構最佳安全性 – 後端防火牆
- 從管理角度來看
  - 主要管理使用者上網行為 – 單一網卡範本
  - 管理所有通訊協定 – 防火牆範本

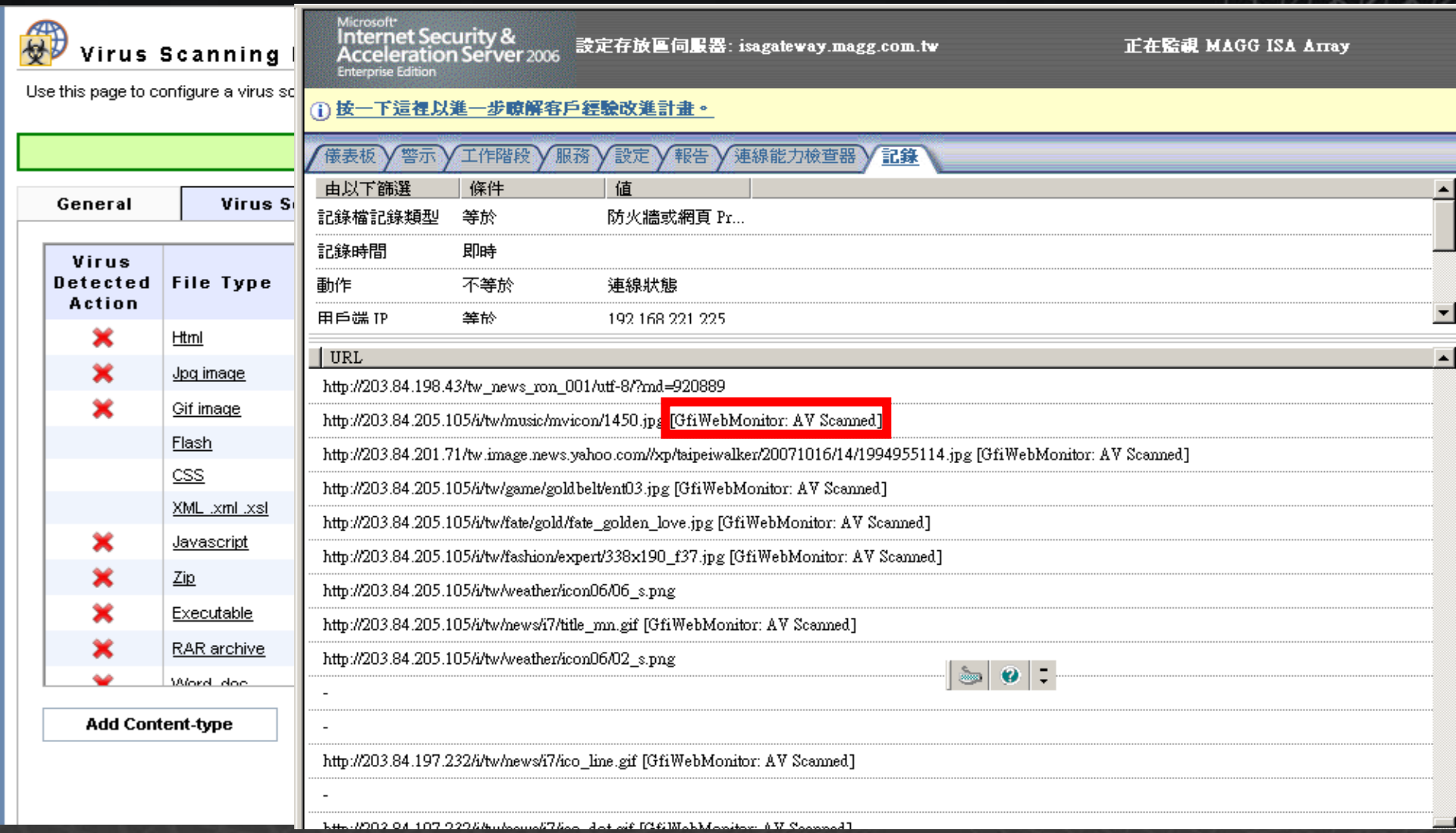
快速為ISA擴充防護機制
GFI WebMonitor

- 釣魚網站防治
- 網頁內容安全
- 網站分類資料庫
- 多重防毒引擎機制
- 最專業的管理報表
- 充分利用ISA Server，不須改變網路架構

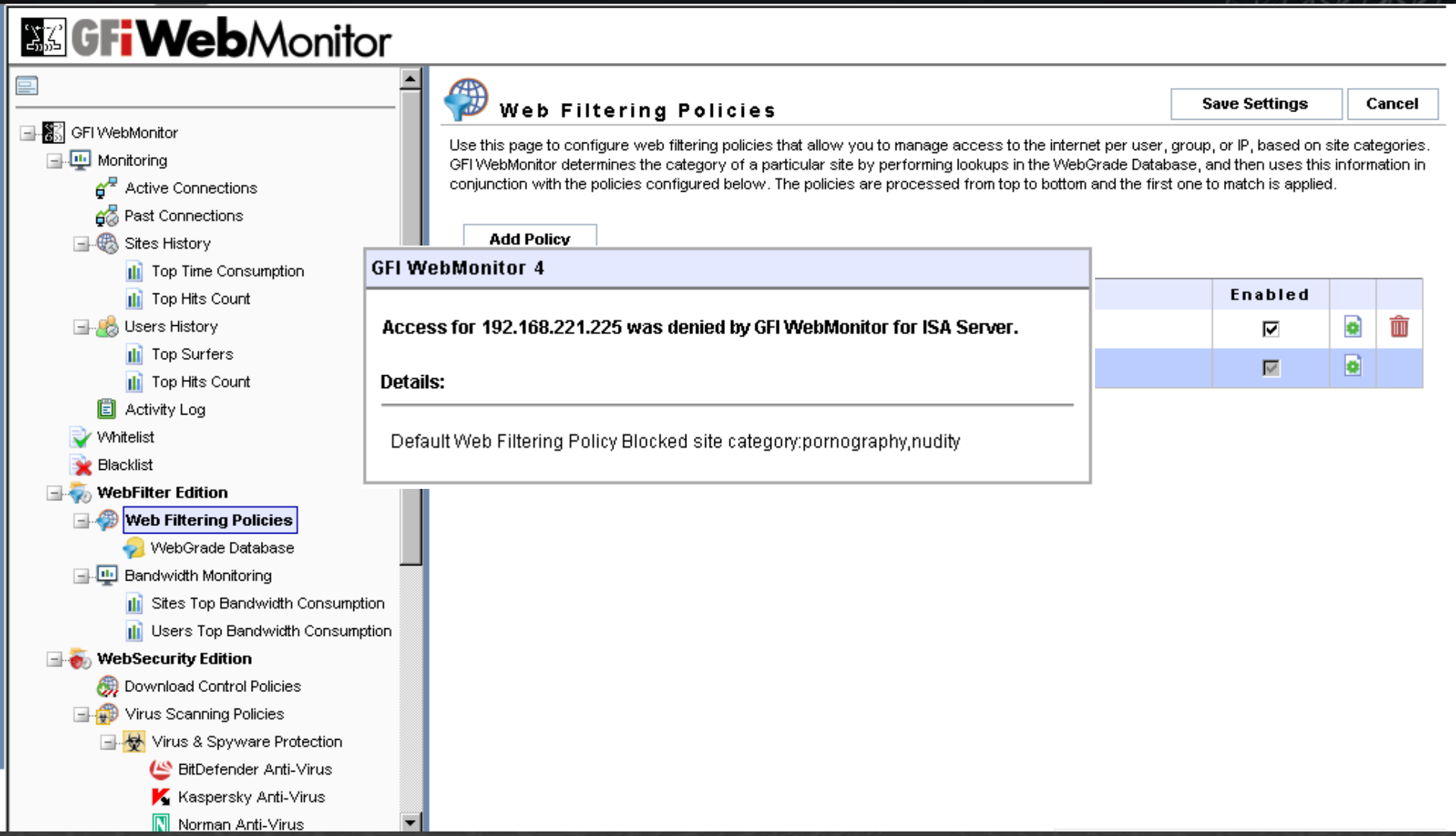
釣魚網站防治


GFiWebMonitor
Blacklist
WebFilter Edition
Web Filtering Policies
WebGrade Database
Bandwidth Monitoring
Sites Top Bandwidth Consumption
Users Top Bandwidth Consumption
WebSecurity Edition
Download Control Policies
Virus Scanning Policies
Virus & Spyware Protection
BitDefender Anti-Virus
Kaspersky Anti-Virus
Norman Anti-Virus
Anti-Phishing Engine
Administrative Access Control
Notifications
General Settings
Reporting
Licensing
Version Information
Quarantine
Today
Yesterday
This Week
All Items
Help
Anti-Phishing Engine
Save Settings
Cancel
Use this page to configure the anti-phishing engine to protect network users from phishing sites.
General
Notifications
Block access to phishing sites.
Anti-Phishing Engine Status and Version
Active. Version:2007-11-10 16:33.
Anti-Phishing Engine License Status
Licensed .
Anti-Phishing Updates
Manage anti-phishing updates automatically
Check for anti-phishing updates, and if available install them, every: 24 hours
Send an email notification to the administrator on successfully updating the anti-phishing.
NOTE: If an anti-phishing update fails, an email notification is always sent to the administrator.
Anti-phishing last updated on: 2007-11-10 16:33 Updated. Next update: 2007-11-11 16:33
Update Now

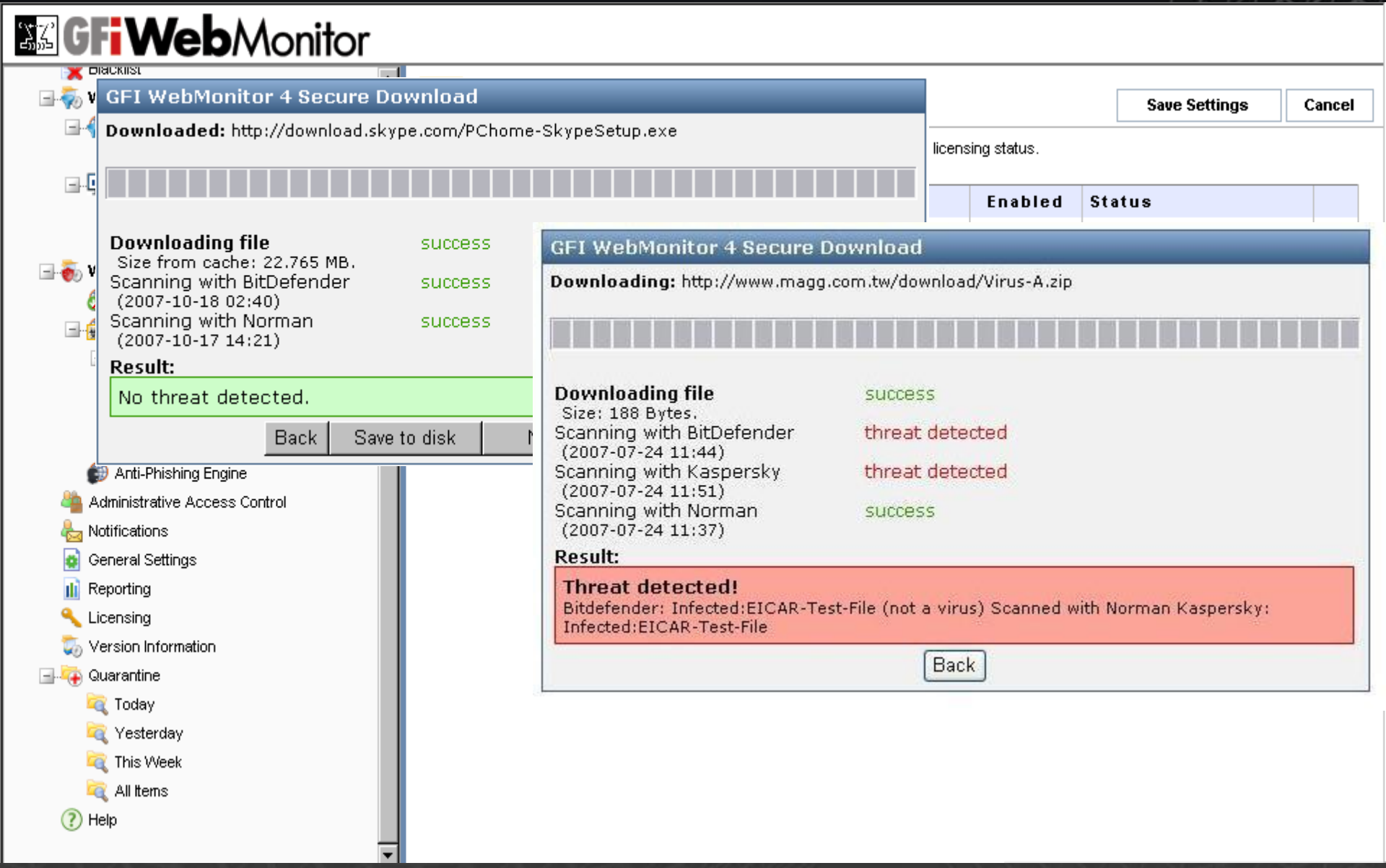
網頁內容安全


Virus Scanning
Use this page to configure a virus sc
General
Virus S
Virus Detected Action
File Type
Html
Jpg image
Gif image
Flash
CSS
XML .xml .xsl
Javascript
Zip
Executable
RAR archive
Add Content-type
Microsoft Internet Security & Acceleration Server 2006 Enterprise Edition
設定存放區伺服器: isagateway.magg.com.tw
正在監視 MAGG ISA Array
按一下這裡以進一步瞭解客戶經驗改進計畫。
儀表板
警示
工作階段
服務
設定
報告
連線能力檢查器
記錄
由以下篩選
條件
值
記錄檔記錄類型
等於
防火牆或網頁 Pr...
記錄時間
即時
動作
不等於
連線狀態
用戶端 IP
等於
192.168.221.225
URL
http://203.84.198.43/tw_news_ron_001/utf-8/?md=920889
http://203.84.205.105/i/tw/music/mvicon/1450.jpg [GfiWebMonitor: AV Scanned]
http://203.84.201.71/tw.image.news.yahoo.com//xp/taipeiwalker/20071016/14/1994955114.jpg [GfiWebMonitor: AV Scanned]
http://203.84.205.105/i/tw/game/goldbelt/ent03.jpg [GfiWebMonitor: AV Scanned]
http://203.84.205.105/i/tw/fate/gold/fate_golden_love.jpg [GfiWebMonitor: AV Scanned]
http://203.84.205.105/i/tw/fashion/expert/338x190_f37.jpg [GfiWebMonitor: AV Scanned]
http://203.84.205.105/i/tw/weather/icon06/06_s.png
http://203.84.205.105/i/tw/news/i7/title_mn.gif [GfiWebMonitor: AV Scanned]
http://203.84.205.105/i/tw/weather/icon06/02_s.png
-
-
http://203.84.197.232/i/tw/news/i7/ico_line.gif [GfiWebMonitor: AV Scanned]
-

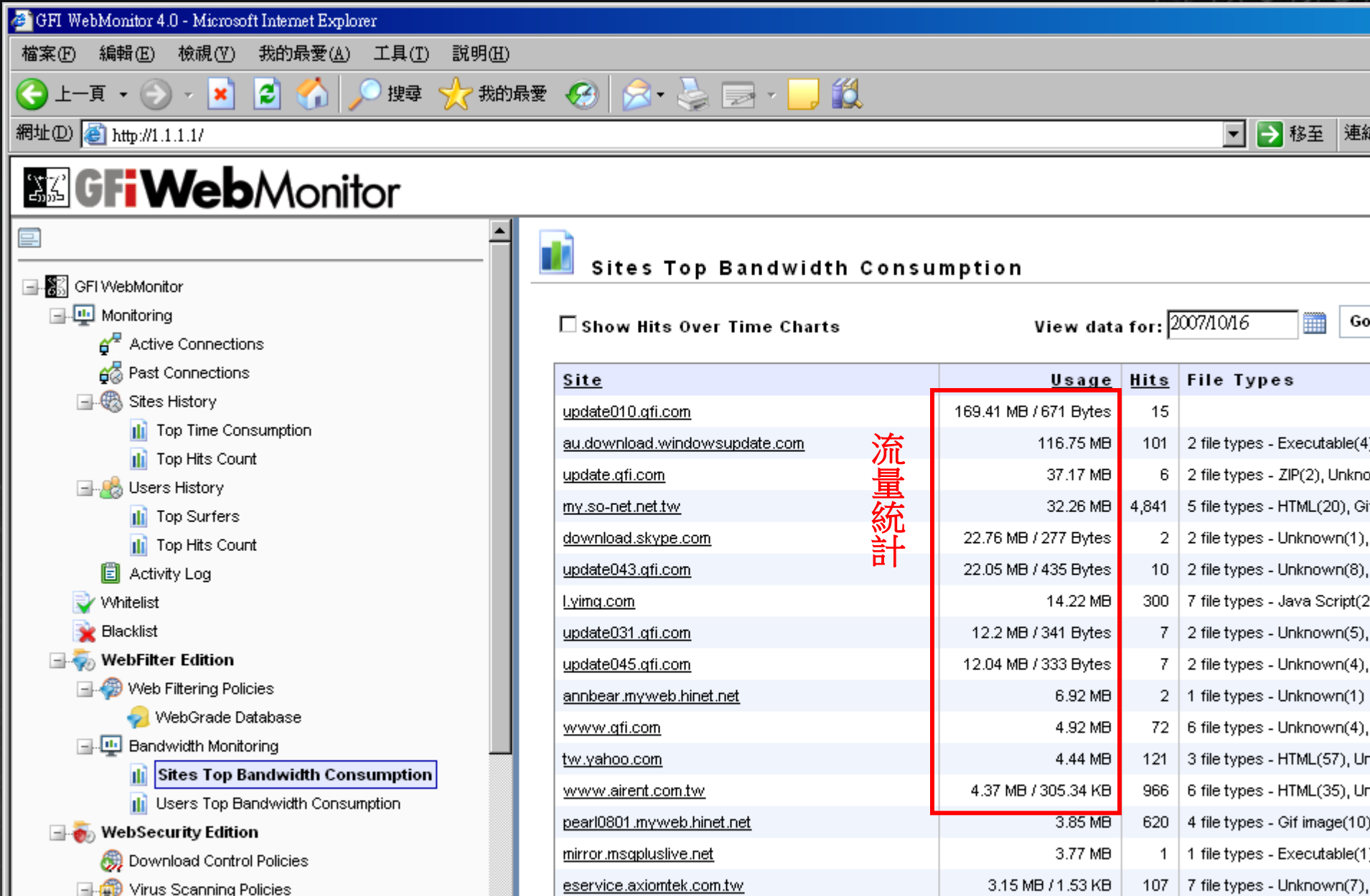
網站分類資料庫


GFI WebMonitor
GFI WebMonitor
Monitoring
Active Connections
Past Connections
Sites History
Top Time Consumption
Top Hits Count
Users History
Top Surfers
Top Hits Count
Activity Log
Whitelist
Blacklist
WebFilter Edition
Web Filtering Policies
WebGrade Database
Bandwidth Monitoring
Sites Top Bandwidth Consumption
Users Top Bandwidth Consumption
WebSecurity Edition
Download Control Policies
Virus Scanning Policies
Virus & Spyware Protection
BitDefender Anti-Virus
Kaspersky Anti-Virus
Norman Anti-Virus
Web Filtering Policies
Save Settings
Cancel
Use this page to configure web filtering policies that allow you to manage access to the internet per user, group, or IP, based on site categories. GFI WebMonitor determines the category of a particular site by performing lookups in the WebGrade Database, and then uses this information in conjunction with the policies configured below. The policies are processed from top to bottom and the first one to match is applied.
Add Policy
GFI WebMonitor 4
Access for 192.168.221.225 was denied by GFI WebMonitor for ISA Server.
Details:
Default Web Filtering Policy Blocked site category:pornography,nudity
Enabled

多重防毒引擎機制


GFI WebMonitor
Blacklist
Anti-Phishing Engine
Administrative Access Control
Notifications
General Settings
Reporting
Licensing
Version Information
Quarantine
Today
Yesterday
This Week
All Items
Help
GFI WebMonitor 4 Secure Download
Downloaded: http://download.skype.com/PChome-SkypeSetup.exe
Downloading file success
Size from cache: 22.765 MB.
Scanning with BitDefender success
(2007-10-18 02:40)
Scanning with Norman success
(2007-10-17 14:21)
Result:
No threat detected.
Back
Save to disk
Save Settings
Cancel
licensing status.
Enabled
Status
GFI WebMonitor 4 Secure Download
Downloading: http://www.magg.com.tw/download/Virus-A.zip
Downloading file success
Size: 188 Bytes.
Scanning with BitDefender threat detected
(2007-07-24 11:44)
Scanning with Kaspersky threat detected
(2007-07-24 11:51)
Scanning with Norman success
(2007-07-24 11:37)
Result:
Threat detected!
Bitdefender: Infected:EICAR-Test-File (not a virus) Scanned with Norman Kaspersky: Infected:EICAR-Test-File
Back

頻寬監控


GFI WebMonitor 4.0 - Microsoft Internet Explorer
檔案(F) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(H)
上一頁 搜尋 我的最愛
網址(D) http://1.1.1.1/
移至
GFiWebMonitor
GFI WebMonitor
Monitoring
Active Connections
Past Connections
Sites History
Top Time Consumption
Top Hits Count
Users History
Top Surfers
Top Hits Count
Activity Log
Whitelist
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WebFilter Edition
Web Filtering Policies
WebGrade Database
Bandwidth Monitoring
Sites Top Bandwidth Consumption
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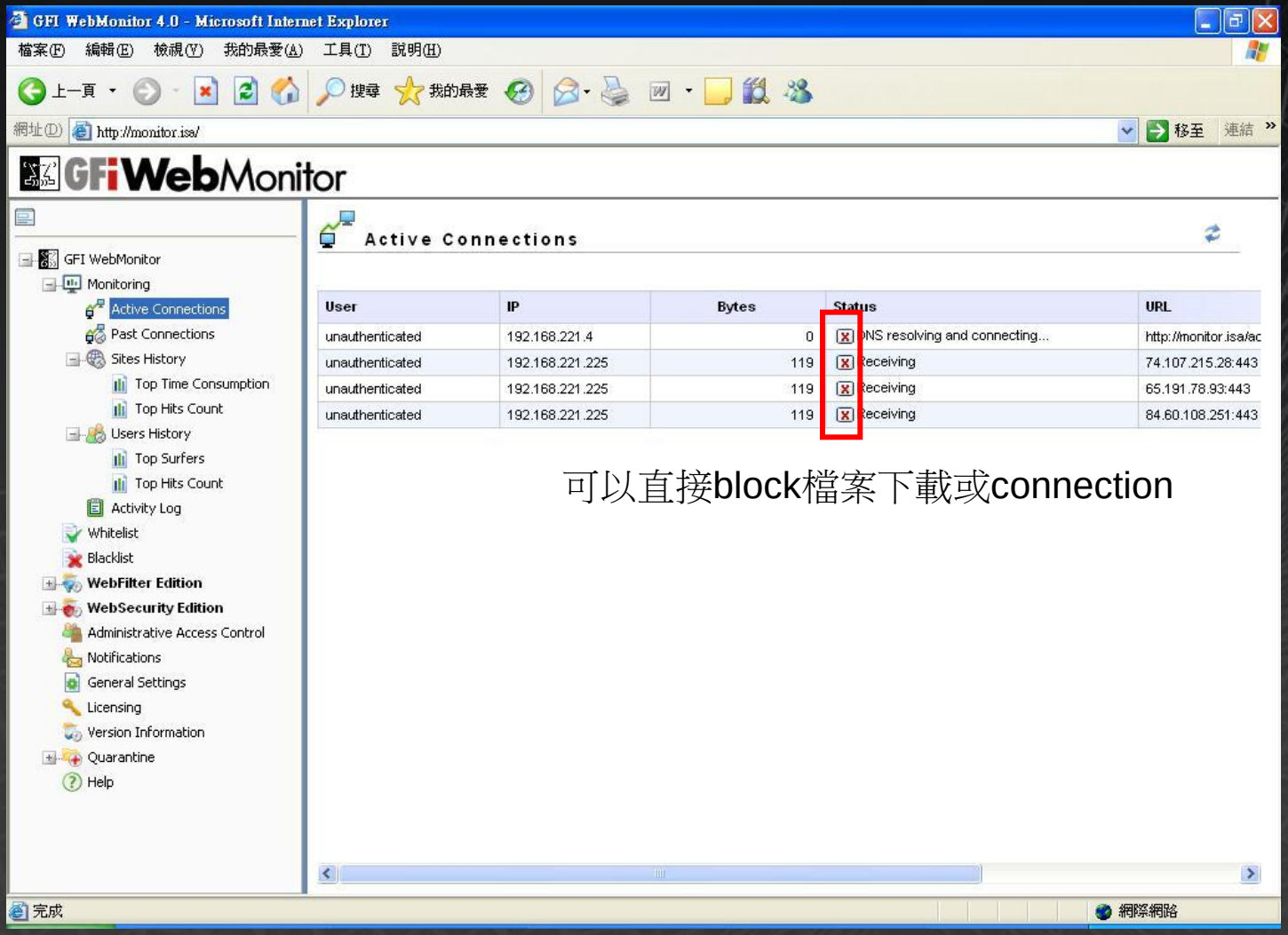
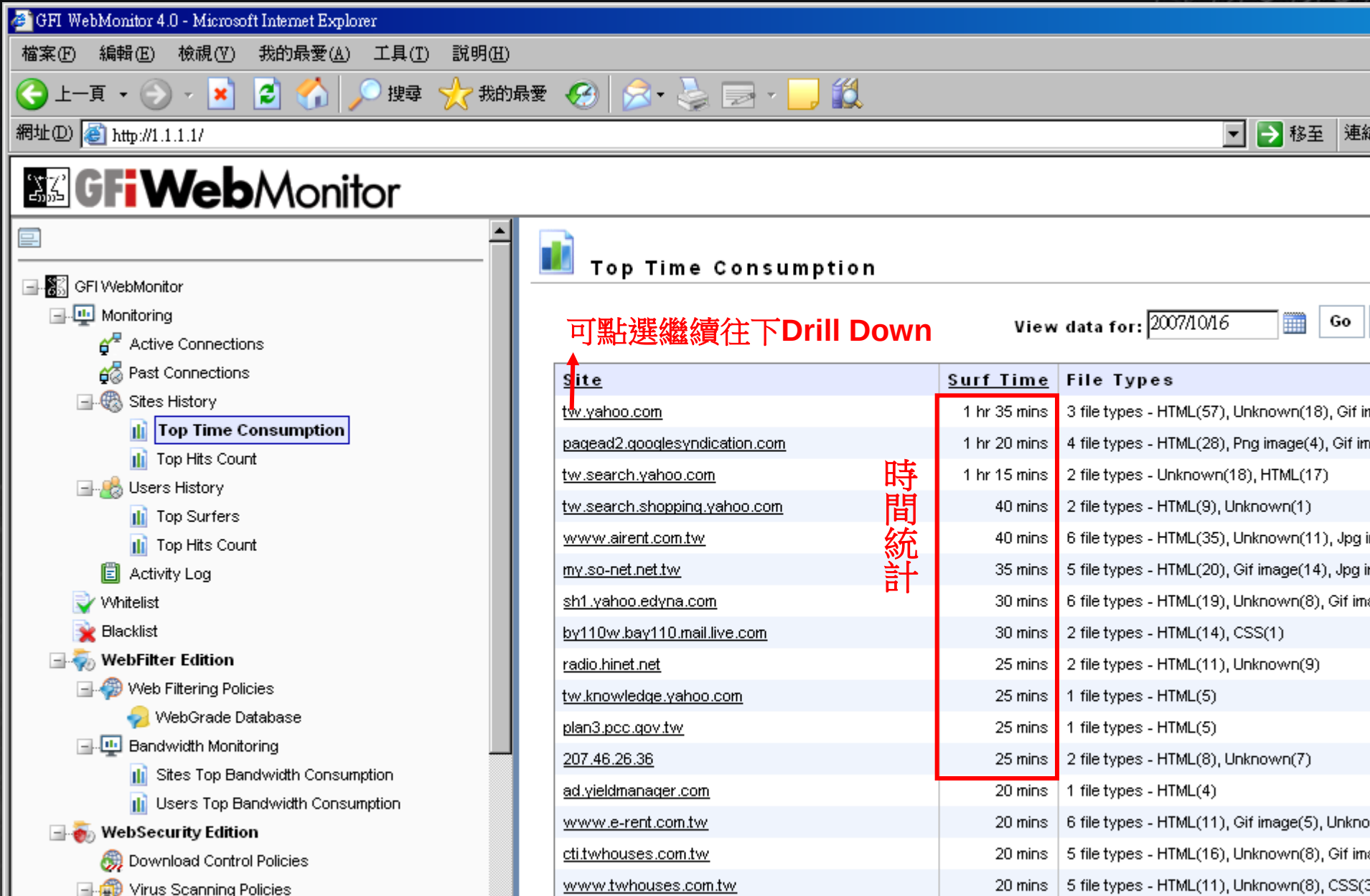
WebSecurity Edition
Download Control Policies
Virus Scanning Policies
Sites Top Bandwidth Consumption
Show Hits Over Time Charts
View data for: 2007/10/16
Go
流量統計
Site
Usage
Hits
File Types
update010.gfi.com 169.41 MB / 671 Bytes 15
au.download.windowsupdate.com 116.75 MB 101 2 file types - Executable(4
update.gfi.com 37.17 MB 6 2 file types - ZIP(2), Unkno
my.so-net.net.tw 32.26 MB 4,841 5 file types - HTML(20), Gi
download.skype.com 22.76 MB / 277 Bytes 2 2 file types - Unknown(1),
update043.gfi.com 22.05 MB / 435 Bytes 10 2 file types - Unknown(8),
l.yimg.com 14.22 MB 300 7 file types - Java Script(2
update031.gfi.com 12.2 MB / 341 Bytes 7 2 file types - Unknown(5),
update045.gfi.com 12.04 MB / 333 Bytes 7 2 file types - Unknown(4),
annbear.myweb.hinet.net 6.92 MB 2 1 file types - Unknown(1)
www.gfi.com 4.92 MB 72 6 file types - Unknown(4),
tw.yahoo.com 4.44 MB 121 3 file types - HTML(57), Un
www.airent.com.tw 4.37 MB / 305.34 KB 966 6 file types - HTML(35), Un
pearl0801.myweb.hinet.net 3.85 MB 620 4 file types - Gif image(10)
mirror.msgpluslive.net 3.77 MB 1 1 file types - Executable(1
eservice.axiomtek.com.tw 3.15 MB / 1.53 KB 107 7 file types - Unknown(7),

即時監控瀏覽之網站



可以直接block檔案下載或connection

網站排名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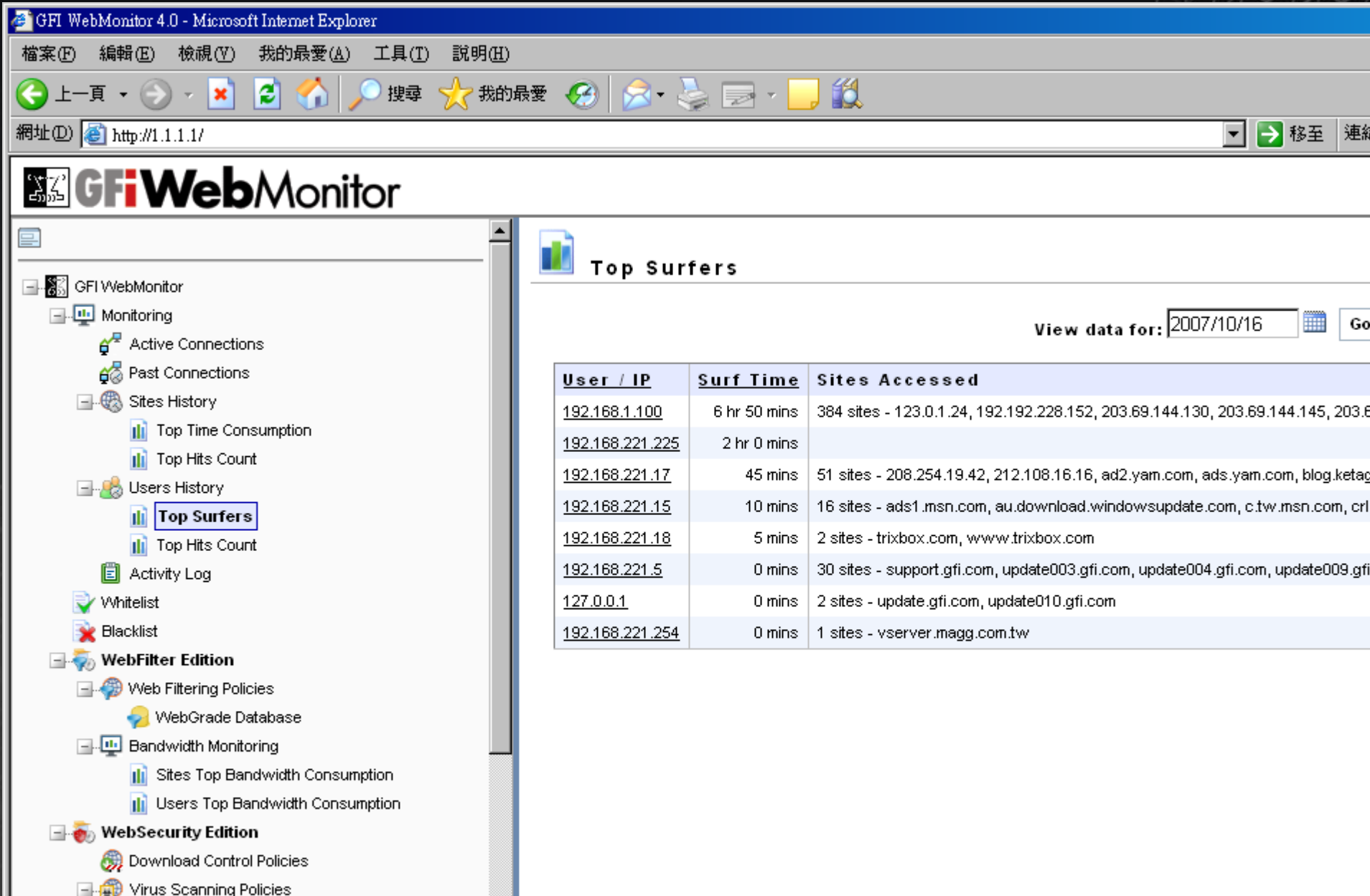
Virus Scanning Policies
Top Time Consumption
可點選繼續往下Drill Down
View data for: 2007/10/16
Go
時間統計
Site
Surf Time
File Types
tw.yahoo.com 1 hr 35 mins 3 file types - HTML(57), Unknown(18), Gif im
pagead2.googlesyndication.com 1 hr 20 mins 4 file types - HTML(28), Png image(4), Gif im
tw.search.yahoo.com 1 hr 15 mins 2 file types - Unknown(18), HTML(17)
tw.search.shopping.yahoo.com 40 mins 2 file types - HTML(9), Unknown(1)
www.airent.com.tw 40 mins 6 file types - HTML(35), Unknown(11), Jpg i
my.so-net.net.tw 35 mins 5 file types - HTML(20), Gif image(14), Jpg i
sh1.yahoo.edyna.com 30 mins 6 file types - HTML(19), Unknown(8), Gif ima
by110w.bay110.mail.live.com 30 mins 2 file types - HTML(14), CSS(1)
radio.hinet.net 25 mins 2 file types - HTML(11), Unknown(9)
tw.knowledge.yahoo.com 25 mins 1 file types - HTML(5)
plan3.pcc.gov.tw 25 mins 1 file types - HTML(5)
207.46.26.36 25 mins 2 file types - HTML(8), Unknown(7)
ad.yieldmanager.com 20 mins 1 file types - HTML(4)
www.e-rent.com.tw 20 mins 6 file types - HTML(11), Gif image(5), Unkno
cti.twhouses.com.tw 20 mins 5 file types - HTML(16), Unknown(8), Gif ima
www.twhouses.com.tw 20 mins 5 file types - HTML(11), Unknown(8), CSS(3

使用者排名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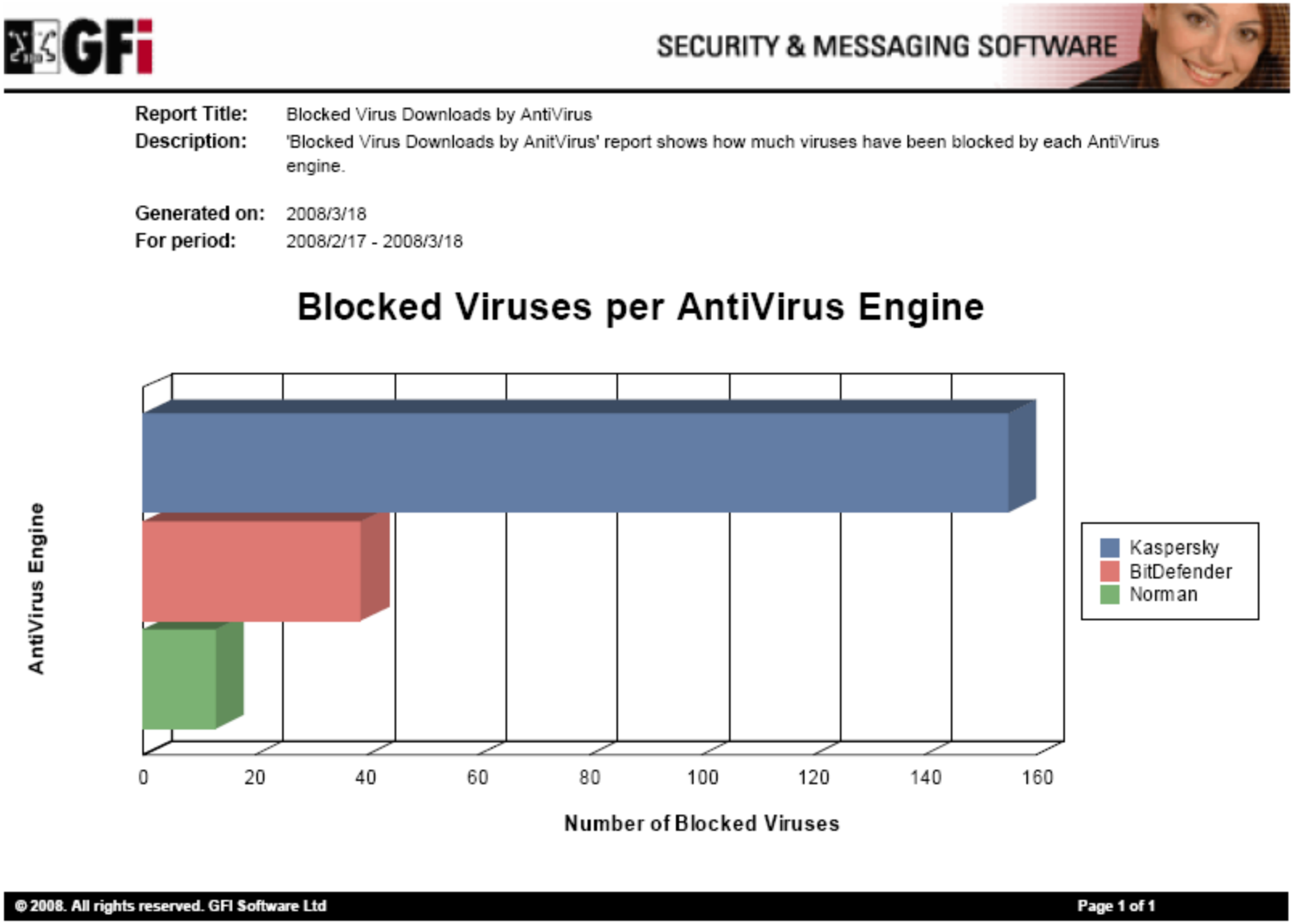
Virus Scanning Policies
Top Surfers
View data for: 2007/10/16
Go
User / IP
Surf Time
Sites Accessed
192.168.1.100
6 hr 50 mins
384 sites - 123.0.1.24, 192.192.228.152, 203.69.144.130, 203.69.144.145, 203.6
192.168.221.225
2 hr 0 mins
192.168.221.17
45 mins
51 sites - 208.254.19.42, 212.108.16.16, ad2.yam.com, ads.yam.com, blog.ketag
192.168.221.15
10 mins
16 sites - ads1.msn.com, au.download.windowsupdate.com, c.tw.msn.com, crl
192.168.221.18
5 mins
2 sites - trixbox.com, www.trixbox.com
192.168.221.5
0 mins
30 sites - support.gfi.com, update003.gfi.com, update004.gfi.com, update009.gfi
127.0.0.1
0 mins
2 sites - update.gfi.com, update010.gfi.com
192.168.221.254
0 mins
1 sites - vserver.magg.com.tw

Microsoft® Forefront™

最專業的管理報表 - ReportPack

報表範例 - 各防毒引擎攔截病毒報告



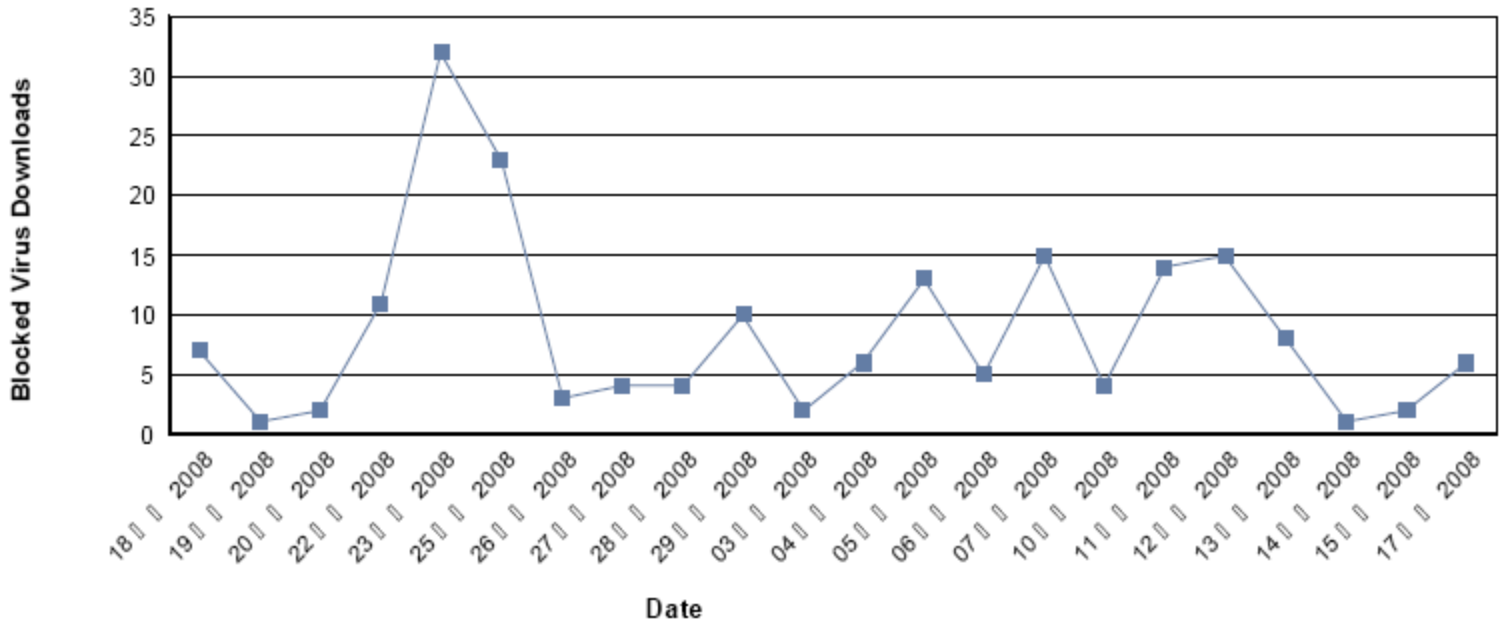
報表範例 -閘道病毒攔截趨勢圖

GFI SECURITY & MESSAGING SOFTWARE

Report Title: Blocked Virus Downloads Trend
Description: 'Blocked Virus Downloads Trend' report shows the number of viruses blocked over a period of time.

Generated on: 2008/3/18
For period: 2008/2/17 - 2008/3/18

Blocked Virus Downloads Trend



報告範例 -使用者頻寬使用排行榜

GFI

SECURITY & MESSAGING SOFTWARE

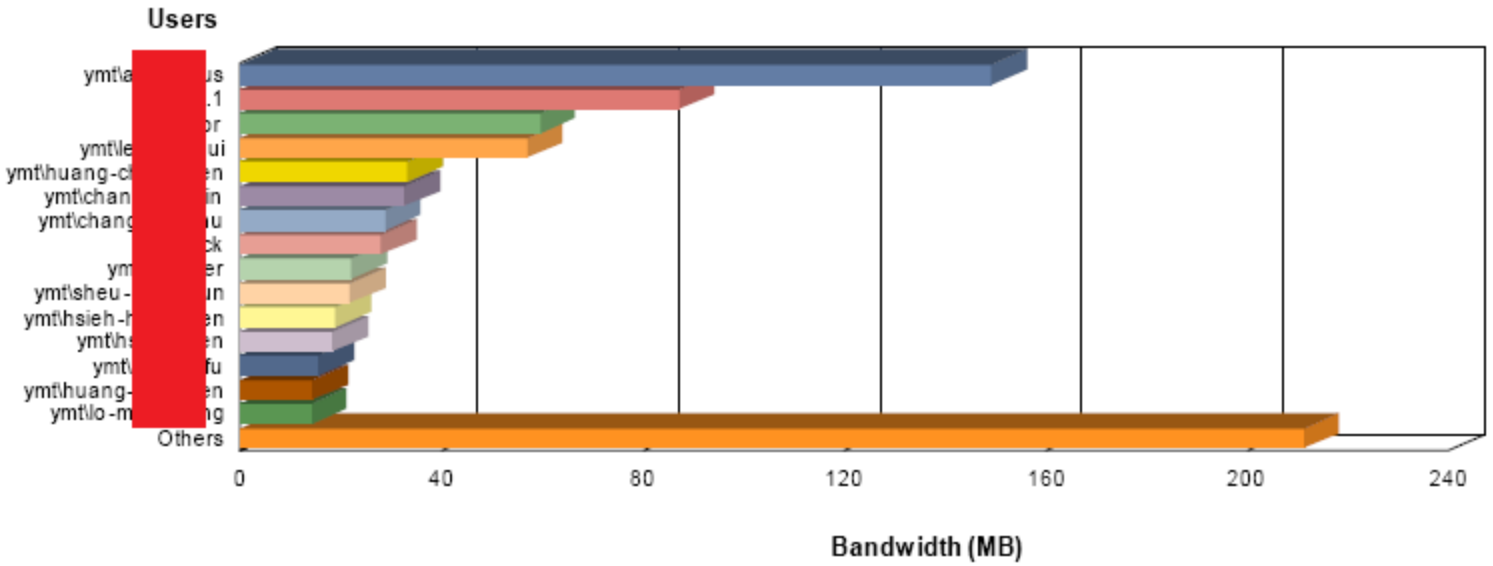
Report Title: Bandwidth Usage by Users

Description: 'Bandwidth usage by Users' report shows the amount of bandwidth consumed by each user sorted by bandwidth consumption.

Generated on: 2007/12/22

For period: 2007/11/22 - 2007/12/22

Bandwidth usage by Users



問題與討論

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