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Smarter software for a Smarter Planet.

Domino HTTP 伺服器原理及最佳實踐

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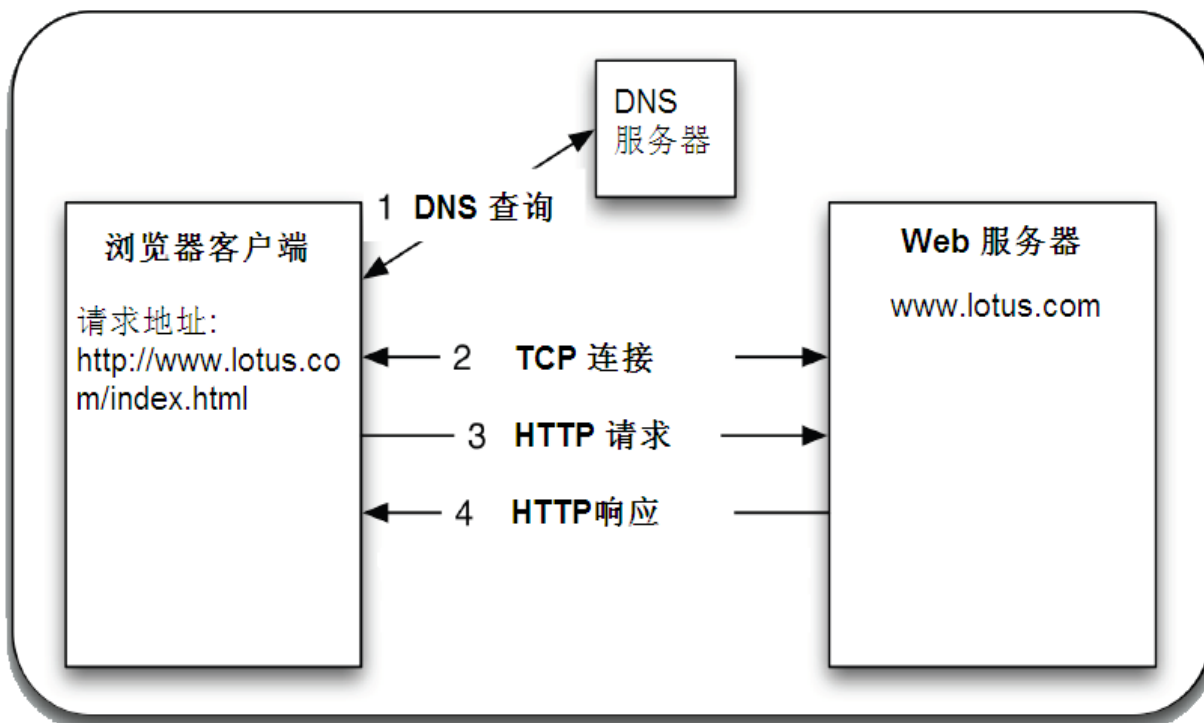


議程

- Domino HTTP 伺服器工作原理和結構
- Domino HTTP 伺服器相關設置和最佳實踐
- 監控 Domino HTTP 伺服器
- 常見問題及排錯

HTTP 伺服器基本原理

- 基本的 HTTP 請求 / 回應模型



HTTP请求头:

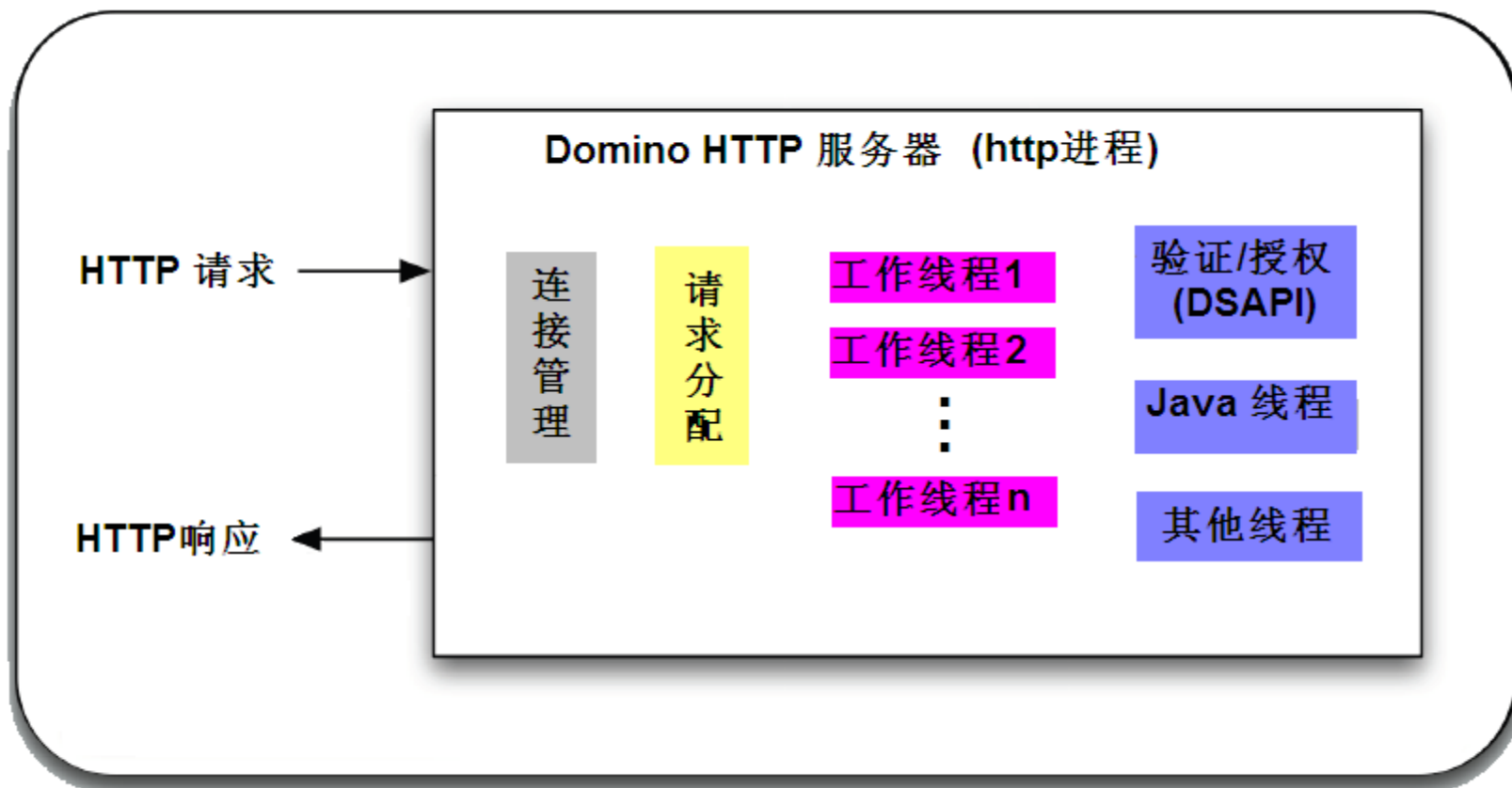
```
GET /index.html HTTP/1.1
Host: www.lotus.com
User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.1; zh-CN; rv:1.9.1.5)
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-us,zh-cn;q=0.8,zh-tw;q=0.5,zh;q=0.3
Accept-Encoding: gzip,deflate
Accept-Charset: gb18030,utf-8;q=0.7,*;q=0.7
Keep-Alive: 300
Connection: keep-alive
```

HTTP响应头:

```
HTTP/1.x 200 OK
Date: Tue, 15 Dec 2009 06:21:38 GMT
Server: IBM_HTTP_Server/7.0.0.0
Accept-Ranges: bytes
Content-Type: text/html
Content-Length: 6729
Connection: Keep-Alive
Content-Encoding: gzip
Age: 311
```

Domino HTTP 伺服器基本原理

- Domino HTTP 伺服器結構



議程

- Domino HTTP 伺服器工作原理和結構
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Domino HTTP 伺服器相關設置和最佳實踐

- HTTP 伺服器相關設置的位置
 - 伺服器檔案
 - Internet 網站檔案
- 基本設置
- 高級設置

Domino HTTP 伺服器相關設置和最佳實踐

- HTTP 伺服器相關設置的位置

- 伺服器檔案
 - 基本
 - 從“伺服器 /Internet 網站”檔案載入 Internet 站點配置
 - port- 網際網路 port – Web
 - 網際網路協議 – HTTP
 - 網際網路協定 – Domino Web 引擎
- Internet 網站檔案 - Web



Domino HTTP 伺服器相關設置和最佳實踐

- 基本設置
 - port 設置
 - session 設置

Domino HTTP 伺服器相關設置和最佳實踐

- port 設置
 - 伺服器文檔 - port – 網際網路 port- Web

Web	目錄	郵件	DIIOP	遠端除錯管理員	伺服器控制器
Web (HTTP/HTTPS)					
TCP/IP 通訊埠號碼:	80				
TCP/IP 通訊埠狀態:	已啟用				
強制伺服器存取設定值:	否				
認證選項:					
名稱與密碼:	是				
匿名:	是				
SSL 通訊埠號碼:	443				
SSL 通訊埠狀態:	已停用				
認證選項:					
用戶端憑證:	否				
名稱與密碼:	是				
匿名:	是				

Domino HTTP 伺服器相關設置和最佳實踐

- Session 設置
 - 多伺服器 (SSO)VS 單伺服器
 - 空閒超時
 - 標記 (Token) 到期



Domino HTTP 伺服器相關設置和最佳實踐

- 高級設置
 - 字元集編碼設置
 - 活動執行緒設置
 - 最大 POST 資料
 - 併發 Web 代理

Domino HTTP 伺服器相關設置和最佳實踐

- 字元集編碼設置
 - 伺服器檔案 - 網際網路協定 - Domino Web 引擎 - 字元集



- 單一語言 vs UTF-8
- 如果是 DWA(iNotes), 推薦設置為"使用 UTF-8 輸出"

Domino HTTP 伺服器相關設置和最佳實踐

- 活動 thread 設置

- 伺服器檔案 – 網際網路協議 – HTTP – 基本

- 並非越大越好

- 建議單 CPU 伺服器 不超過 64

- 多 CPU 伺服器不超過 80

- 參考檔案：Domino Http thread 的推薦設置

- <http://www.ibm.com/cn/support/viewdoc/detail?DocId=1897668E20003>

- <http://www.ibm.com/support/docview.wss?rs=899&uid=swg21173877>

基本	
主機名稱:	<input type="text"/>
連至主機名稱:	<input type="text" value="已停用"/>
DNS 檢查:	<input type="text" value="已停用"/>
DNS 查閱快取:	<input type="text" value="已啟用"/>
DNS 查閱快取大小:	<input type="text" value="256"/>
發現 DNS 查閱快取逾時:	<input type="text" value="120"/> 秒
DNS 查閱快取未發現逾時:	<input type="text" value="240"/> 秒
計算使用中的執行緒作業:	<input type="text" value="40"/>

Domino HTTP 伺服器相關設置和最佳實踐

- 最大 POST 資料
 - Domino Web 引擎 – POST 資料

POST 資料	
最大 POST 資料 (以 kilobytes 計):	<input type="text" value="10000"/>
上傳時壓縮檔案:	<input type="text" value="已停用"/>

- HTTP- HTTP 協議限制

HTTP 通信協定限制	
URL 長度上限:	<input type="text" value="4"/> KB
最大的 URL 路徑區段數:	<input type="text" value="64"/>
最大的要求標頭數:	<input type="text" value="48"/>
最大要求標頭大小:	<input type="text" value="16"/> KB
要求內容大小上限:	<input type="text" value="10000"/> KB (指定 0 以容許無限內容)

- 限制上傳附件的大小時需要設置

Domino HTTP 伺服器相關設置和最佳實踐

- 併發 Web 代理
 - Domino Web 引擎 – Web 代理和 Web Services



- 開啟可提高 Web 代理的執行效率，但請注意併發運行的 Web 代理必須 **thread safe**
- 建議保持超時為 0，即沒有超時

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監控 Domino HTTP 伺服器

- HTTP 相關的控制台命令
- HTTP 相關的統計資訊
- HTTP 請求日誌
- 監控 HTTP 的記憶體使用

監控 Domino HTTP 伺服器

- HTTP 相關的控制台命令
 - HTTP thread 相關 : tell http show thread state

```
2009-12-07 08:40:00 Http Worker Thread ID [2122]: [Thread State is Idle]
2009-12-07 08:40:00 Http Worker Thread ID [2223]: Working session [3546]: Session State [Processing Request] : GET /OA/application.nsf/Portal_FmDbsv
2009-12-07 08:40:00 Http Worker Thread ID [2324]: Working session [3547]: Session State [Processing Request] : GET /OA/application.nsf/Portal_rcgz?(
2009-12-07 08:40:00 Http Worker Thread ID [2425]: Working session [3548]: Session State [Processing Request] : GET /OA/application.nsf/Portal_FmDbsv
2009-12-07 08:40:00 Http Worker Thread ID [2526]: Working session [3549]: Session State [Processing Request] : GET /OA/application1.nsf/Portal_FmDyv
2009-12-07 08:40:00 Http Worker Thread ID [2627]: Working session [354a]: Session State [Processing Request] : GET /OA/application2.nsf/Portal_FmMai
2009-12-07 08:40:00 Http Worker Thread ID [2728]: Working session [354b]: Session State [Processing Request] : GET /OA/application.nsf/Portal_rcgz?(
2009-12-07 08:40:00 Http Worker Thread ID [2829]: Working session [3474]: Session State [Read Request, waiting for data] :
2009-12-07 08:40:00 Http Worker Thread ID [292a]: Working session [34e1]: Session State [Processing Request] : GET /OA/application3.nsf/HouxuanRY?Ox
2009-12-07 08:40:00 Http Worker Thread ID [2a2b]: [Thread State is Idle]
2009-12-07 08:40:00 Http Worker Thread ID [2b2c]: [Thread State is Idle]
2009-12-07 08:40:00 Http Worker Thread ID [2c2d]: Working session [3550]: Session State [Processing Request] : GET /OA/application.nsf/Portal_rcgz?(
2009-12-07 08:40:00 Http Worker Thread ID [2d2e]: [Thread State is Idle]
2009-12-07 08:40:00 Http Worker Thread ID [2e2f]: Working session [3552]: Session State [Processing Request] : GET /OA/application.nsf/Portal_FmDbsv
2009-12-07 08:40:00 Http Worker Thread ID [2f30]: [Thread State is Idle]
2009-12-07 08:40:00 Http Worker Thread ID [3031]: [Thread State is Idle]
2009-12-07 08:40:00 Http Worker Thread ID [3132]: Working session [347d]: Session State [Processing Request] : GET /OA/application.nsf/WebEditGxs?(
2009-12-07 08:40:00 Http Worker Thread ID [3233]: [Thread State is Idle]
2009-12-07 08:40:00 Http Worker Thread ID [3334]: Working session [3557]: Session State [Processing Request] : GET /OA/application.nsf/fmcywjgc?oper
```

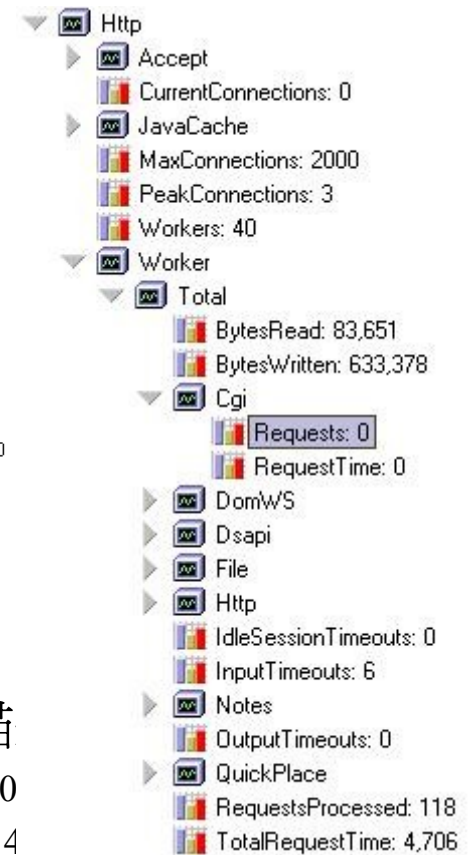
- HTTP 資訊統計 : show stat http

監控 Domino HTTP 伺服器

- HTTP 相關的統計資訊

- Http.Workers
- Http.CurrentConnections
- Http.MaxConnections
- Http.PeakConnections
- Http.Worker.Total.*

```
Http.Worker.Total.BytesRead = 365,196,012
Http.Worker.Total.BytesWritten = 3,651,607,297
Http.Worker.Total.Cgi.Requests = 0
Http.Worker.Total.Cgi.RequestTime = 0
Http.Worker.Total.DomWS.Requests = 0
Http.Worker.Total.DomWS.RequestTime = 0
Http.Worker.Total.Dsapi.Requests = 0
Http.Worker.Total.Dsapi.RequestTime = 0
Http.Worker.Total.File.Requests = 316209
Http.Worker.Total.File.RequestTime = 1,280,904
Http.Worker.Total.Http.Requests = 648
Http.Worker.Total.Http.RequestTime = 355
Http.Worker.Total.IdleSessionTimeouts = 4497875
Http.Worker.Total.InputTimeouts = 57375
Http.Worker.Total.Java.Requests = 616
Http.Worker.Total.Java.RequestTime = 950,613
Http.Worker.Total.Notes.Requests = 190762
Http.Worker.Total.Notes.RequestTime = 182,687,700
Http.Worker.Total.OutputTimeouts = 0
Http.Worker.Total.QuickPlace.Requests = 0
Http.Worker.Total.QuickPlace.RequestTime = 0
Http.Worker.Total.RequestsProcessed = 508235
Http.Worker.Total.TotalRequestTime = 184,919,572
```



- 參考檔案：Lotus Domino 伺服器 HTTP 統計資料的描

- <http://www.ibm.com/cn/support/viewdoc/detail?DocId=1897669I0900>
- <http://www.ibm.com/support/docview.wss?rs=899&uid=swg21207314>

監控 Domino HTTP 伺服器

- HTTP 請求日誌
 - 啟用 / 禁用命令 : `tell http debug thread on/off`
 - 輸出 : 資料目錄 /IBM_TECHNICAL_SUPPORT/htthr*.log
 - 對磁片性能有一定的影響，長期使用需要評估

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*** New Request -- Parse and Check Request: Session c7aa, Thread 1a1b, Clock 10689821

```
POST /mail/zhangsan.nsf/Memo?OpenForm&Seq=1 HTTP/1.1
Accept: image/gif, image/x-bitmap, image/jpeg, image/pjpeg, application/x-shockwave-flash, application/vnd.ms-excel, application/vnd.ms-powerpoint,
Referer: http://www.lotus.com/mail/zhangsan.nsf/Memo?openform
Accept-Language: zh-cn
Content-Type: multipart/form-data; boundary=-----7d9156212e0a18
UA-CPU: x86
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; .NET CLR 1.1.4322; InfoPath.1; .NET CLR 2.0.50727)
Host: sgsmail.js.cmcc
Content-Length: 10415
Connection: Keep-Alive
Cache-Control: no-cache
Cookie: amlbcookie=03; iPlanetDirectoryPro=AQIC5wM2LY4Sfcz%2BddyPZcOLCt961Nkq%2BBtBgcuQJBLUU%3D%40AAJTSQACMDM%3D%23; DOBBS=JSMCCOA; DOURL=sgsoa.js
```

请求头

*** Process Request: Session c7aa, Thread 1a1b, Clock 10689913

*** Client IP Address [10.32.73.162], Server IP Address [10.33.206.142]: Session c7aa, Thread 1a1b, Clock 10689913

*** Start Request Step: Session c7aa, Thread 1a1b, Clock 10689931

*** Raw Request Step: Session c7aa, Thread 1a1b, Clock 10689982

*** Pre Authenticate Step: Session c7aa, Thread 1a1b, Clock 10690182

*** Authenticate Step: Session c7aa, Thread 1a1b, Clock 10690278

*** Post Authenticate Step: Session c7aa, Thread 1a1b, Clock 10690786

*** Get Group List Step: Session c7aa, Thread 1a1b, Clock 10690887

*** Authorized Server Access Step: Session c7aa, Thread 1a1b, Clock 10690907

*** Translate Step: Session c7aa, Thread 1a1b, Clock 10690912

*** Post Translate Step: Session c7aa, Thread 1a1b, Clock 10690912

*** Authorized Step: Session c7aa, Thread 1a1b, Clock 10690912

*** Process Request for User CN=张三/OU=User/O=Lotus: Session c7aa, Thread 1a1b, Clock 10690912

*** Calling Url Cache Process Request: Session c7aa, Thread 1a1b, Clock 10690912

*** Calling Inotes Process Request: Session c7aa, Thread 1a1b, Clock 10690912

*** Post write Buffer, bytes [166]: Session c7aa, Thread 1a1b, Clock 10691449

验证/授权

Domino 处理过程

Domino 计算过程

HTTP/1.1 200 OK

Server: Lotus-Domino

Date: Wed, 25 Nov 2009 06:02:09 GMT

Content-Type: text/html; charset=GB2312

Content-Length: 1007

Content-Language: zh-cn

响应头

*** Returned from Process Request, Request Processed: Session c7aa, Thread 1a1b, Clock 10691514

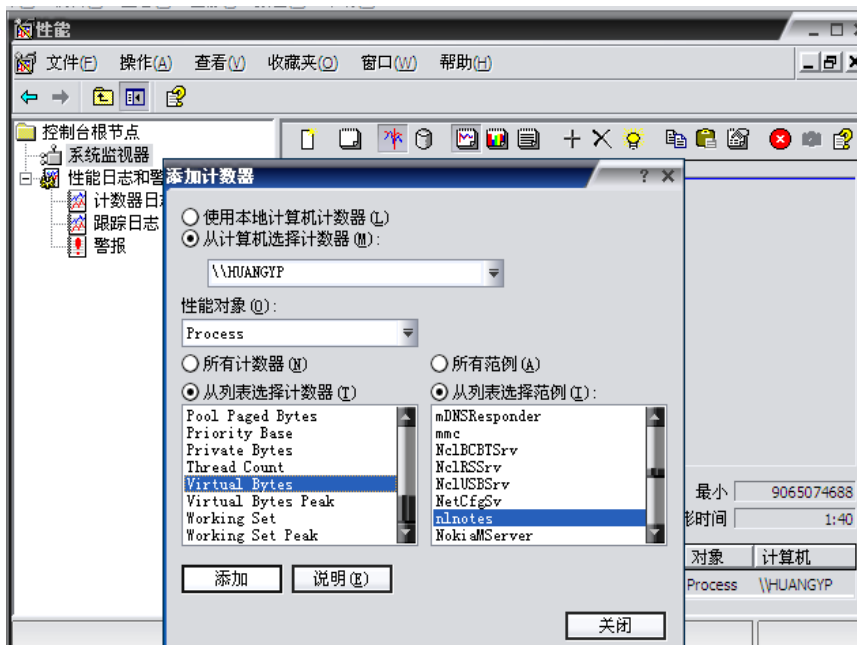
*** End Request Step: Session c7aa, Thread 1a1b, Clock 10691520

*** Log Request: Session c7aa, Thread 1a1b, Clock 10691521



監控 Domino HTTP 伺服器

- 監控 HTTP memory 使用
 - Windows – 監控 nhttp.exe 的虛擬 memory 大小
 - 控制台 – 管理工具 – 性能
 - 添加計數器 – Process – Virtual Bytes (nhttp.exe)



監控 Domino HTTP 伺服器

- 監控 HTTP memory 使用
 - AIX – 監控 http 私有 memory 大小
 - `ps -elf|grep/ibmpow/http| grep -v grep | awk '{print $10}'`
 - `svmon -P <pid>` , 查看 Esid 2 和 3 使用總和 *4K
 - Solaris/Linux – 監控 http 虛擬 memory 大小
 - `ps -elf` , SZ/Size 列, 結果 *4K
 - `pmap <pid>`

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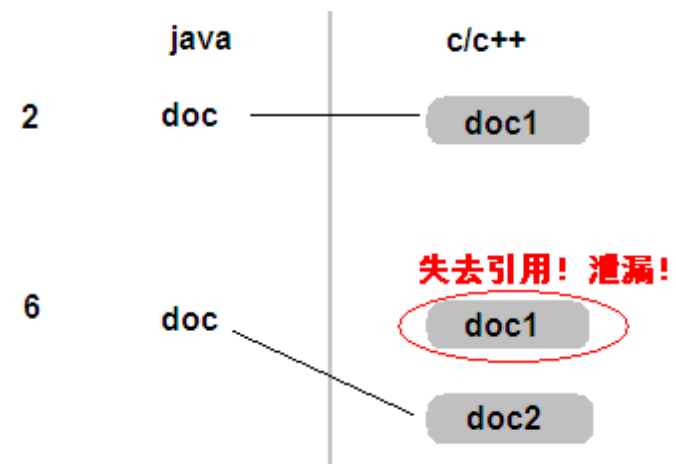
常見問題及排錯

- memory 相關問題
 - 使用 Domino Java Object 的注意事項
 - thread memory 的優化
- 性能問題
 - HTTP thread 分派方式
 - 維護未讀標記
 - 多 thread 下載工具
- 排錯所需資料的搜集

常見問題及排錯

- 使用 Domino Java Object 的注意事項
 - 現象： HTTP memory 使用持續升高，最終觸發限制引起宕機等故障
 - 原因： lotus.domino.* 中的物件，使用了本地方法，含有 C/C++ 物件，不能完全被 JVM 垃圾回收機制回收，需要使用 recycle() 方法，手工釋放。

```
1 //v 是一个视图对象
2 Document doc = v.getFirstDocument(); //取第一个文档
3 while (doc != null)
4 {
5     // 某些文档操作
6     doc = v.getNextDocument(doc); //取下一个文档
7 }
8 // 循环结束
```



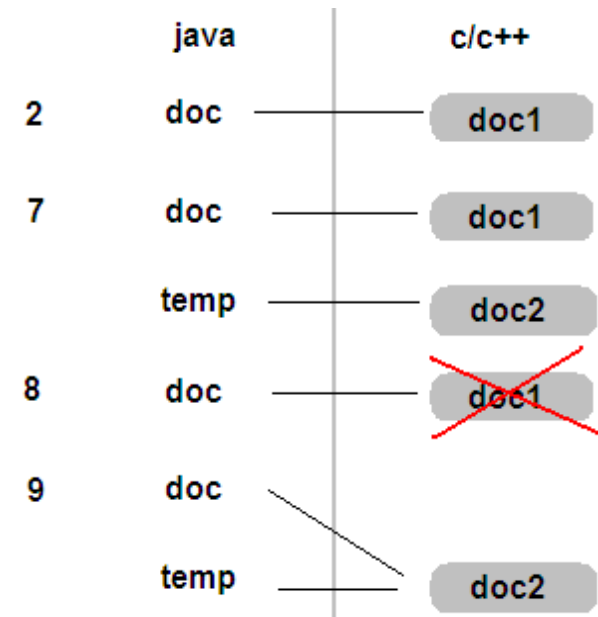
常見問題及排錯

- 使用 Domino Java Object 的注意事項 (續)

- 正確方法

```

1 //v 是一个视图对象
2 Document doc = v.getFirstDocument(); //取第一个文档
3 Document temp = null;
4 while (doc != null)
5 {
6     // 某些文档操作
7     temp = v.getNextDocument(doc); //使用临时变量取下一个文档 doc2
8     doc.recycle(); //释放 doc1
9     doc = temp; //将doc2的指针交给doc变量
10 }
11 // 循环结束
    
```



- 參考檔案：為什麼調用 Recycle() 方法對每個 Java object 很重要？
 - <http://www.ibm.com/cn/support/viewdoc/detail?DocId=1497669F17000>
 - <http://www.ibm.com/support/docview.wss?rs=899&uid=swg21097861>
- 在迴圈中，需特別注意！！

常見問題及排錯

- thread memory 的優化
 - 現象：HTTP memory 使用持續增長，可能在到達限制前平穩，或者觸發限制引起宕機等故障。多見於應用伺服器
 - 添加 notes.ini 參數：InotesThreadMemoryGivePoolsBack=1
 - 需要 6.5.6 或者 7.0.2 以上版本

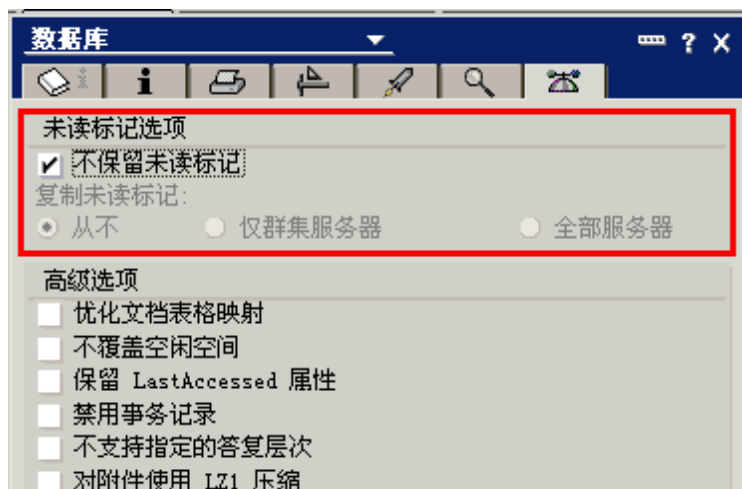
常見問題及排錯

- HTTP 工作 thread 分派方式
 - 現象：瀏覽器用戶端間歇性回應慢，請求沒有共同點，可能出現在任何請求上
 - 如果所有請求的時間都較短，使用 HTTPQueueMethod=0 (R6 之後版本的缺省值)
 - 如果有可能有長請求，建議使用 HTTPQueueMethod=2
 - 參考檔案：在 6.X 中 HTTP thread 佇列的運行方式在某些情況下會有性能問題
 - <http://www.ibm.com/cn/support/viewdoc/detail?DocId=1897669J14000>
 - <http://www.ibm.com/support/docview.wss?rs=899&uid=swg21201715>

常見問題及排錯

- 維護未讀標記

- 現象：針對某些應用資料庫，特別是文檔多，資料庫容量大的資料庫，存取速度較慢
- 維護未讀標記需要額外的資源和時間消耗
- 如果沒有特殊的需求，通常應用資料庫不需要維護未讀標記



常見問題及排錯

- **Multiple thread 工具**
 - 表現：HTTP 回應速度慢或者沒有回應，`tell http show thread state` 輸出可以看到大部分請求都是訪問同一個檔
 - 對於大檔案，使用單獨的 HTTP/FTP 伺服器提供下載。尤其針對遠端慢速連接
 - 通常需要從管理層面以及網路層面禁用多 **thread** 下載工具

常見問題及排錯

- 排錯所需要收集的資料
 - 伺服器宕機 / 掛起問題的收集步驟：
 - <http://www-900.ibm.com/cn/support/viewdoc/detail?DocId=1897668A07000>
 - 定時自動收集 Domino 記憶體 dump
 - <http://www-900.ibm.com/cn/support/viewdoc/detail?DocId=1897668A10000>
 - 定時收集作業系統記憶體監控命令的結果

參考資訊

- Lotus 技術知識檔案
 - 每月發送
 - 包含熱點問題和常見問題，幫您避免或者快速解決遇到的問題
 - 發郵件到 lotusfaq@cn.ibm.com 訂閱
- 升級 Domino 伺服器到 8.5 版本的步驟
 - <http://www-900.ibm.com/cn/support/viewdoc/detail?DocId=2897669L11000>
- 中文技術支援網站
 - 近 3500 篇中文技術文檔
 - 支持全文檢索搜尋
 - <http://www-900.ibm.com/cn/support/viewdoc/uprosupport?pageid=0&category=5>

問與答



Lotus knows.

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Thank
YOU

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常見問題及排錯

- Java 類載入問題

- 現象： HTTP 記憶體使用持續升高，會有 JVM Out of Memory 的錯誤
- 在 java 代理中引入歸檔檔 (jar) 可能會引起記憶體問題
- 使用 notes.ini 參數， JavaUserClasses= 來引入自定制的 jar 文件
- 參數的值少於 256 個字元
- 例如：

```
JavaUserClasses=C:\Lotus\Domino\java;dsig.zip;xalan.jar;xercesImpl.jar;stcore.jar;  
stmtgmanagement.jar;STNotesCalendar.jar;log4j.jar;ibmjssse.jar;xml-apis.jar;mail.jar;  
activation.jar;C:\Lotus\Domino\Data
```

- 如果需要載入的類較多，使用 JavaUserClassesExt= 參數
- 例如：

```
JavaUserClassesExt=ST00,ST01,ST02,ST03,ST04,ST05,ST06,ST07,ST08,  
ST09,ST10,ST11,ST12  
ST00=C:\Lotus\Domino\java  
ST01=C:\Lotus\Domino\dsig.zip  
ST02=C:\Lotus\Domino\xalan.jar  
ST03=C:\Lotus\Domino\xercesImpl.jar  
ST04=C:\Lotus\Domino\stcore.jar  
ST05=C:\Lotus\Domino\stmtgmanagement.jar  
ST06=C:\Lotus\Domino\STNotesCalendar.jar  
ST07=C:\Lotus\Domino\log4j.jar  
ST08=C:\Lotus\Domino\ibmjssse.jar  
ST09=C:\Lotus\Domino\xml-apis.jar  
ST10=C:\Lotus\Domino\mail.jar  
ST11=C:\Lotus\Domino\activation.jar  
ST12=C:\Lotus\Domino\Data
```