

## 掌握企業 SOA 的狀況

企業目前最紅的科技，SOA(Service-Oriented Architecture)，服務為導向的架構，目的在提供一個分散式架構且鬆散耦合的介面，讓服務的使用的可以依其商業流程之所需任意索取其所需之服務元件。

此架構概念出現後，IT 業界開始有 SOA 相關應用的產品上市，但其中著眼點都在如何將現有非公開介面的系統轉換成公開的 web service，或者開發出所謂的企業匯流排(service bus)，用以連接所有可取得的 service，或者結合 BPM 產品，讓 web service 功能更加緊密；上述的產品基本上有兩個類型：一者，如何將現有的軟體元件，包裝成 web service；二者，連接企業即有的 web service 成為另一個創新的服務。但似乎缺少了管理 service 與監看 service 的解決方案。

一個套裝的 service，不可避免的會用到其他的 service，但在 service 被呼叫的時候，一旦發生了問題，要如何了解在其中的哪個 service 呼叫出了問題就是一個重要的課題；另外 service 被呼叫時，資料返回的速度變的異常緩慢，又該如何了解癥結點在哪個 service；再者，如何可以在 service 運行過程中清楚的紀錄其經歷的每個 service 的關鍵內容，以方便在事後除錯等等。以上所描述到的都是 service 上線之後所將遭遇到的問題，但是目前有關 SOA 的產品似乎對此都甚少著墨。



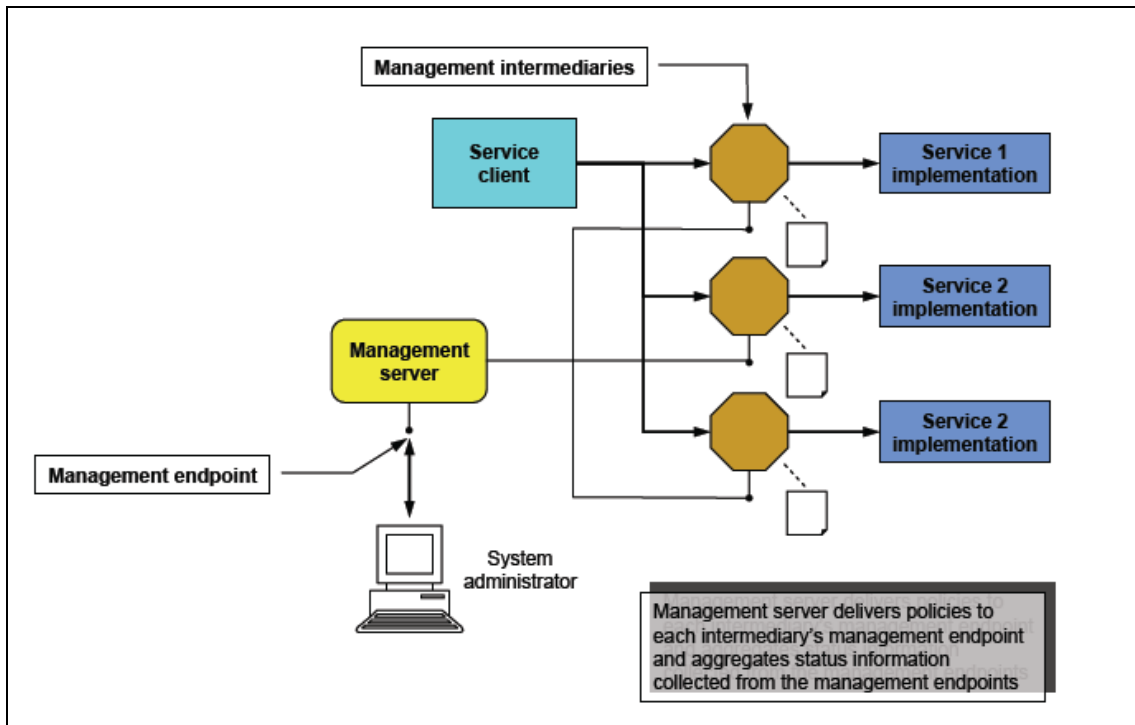
### 運用 AmberPoint，掌握企業服務

#### AmberPoint Management System 的功能

倍力資訊所代理產品 AmberPoint Management System(以下簡稱 AMS)，即為因應此一管理上的需求而誕生的產品，可以輕鬆的利用它達成以下功能：

- Discover services
- Analyze service dependencies
- Monitor
- Log
- Notify
- Apply policy-based, runtime governance rules

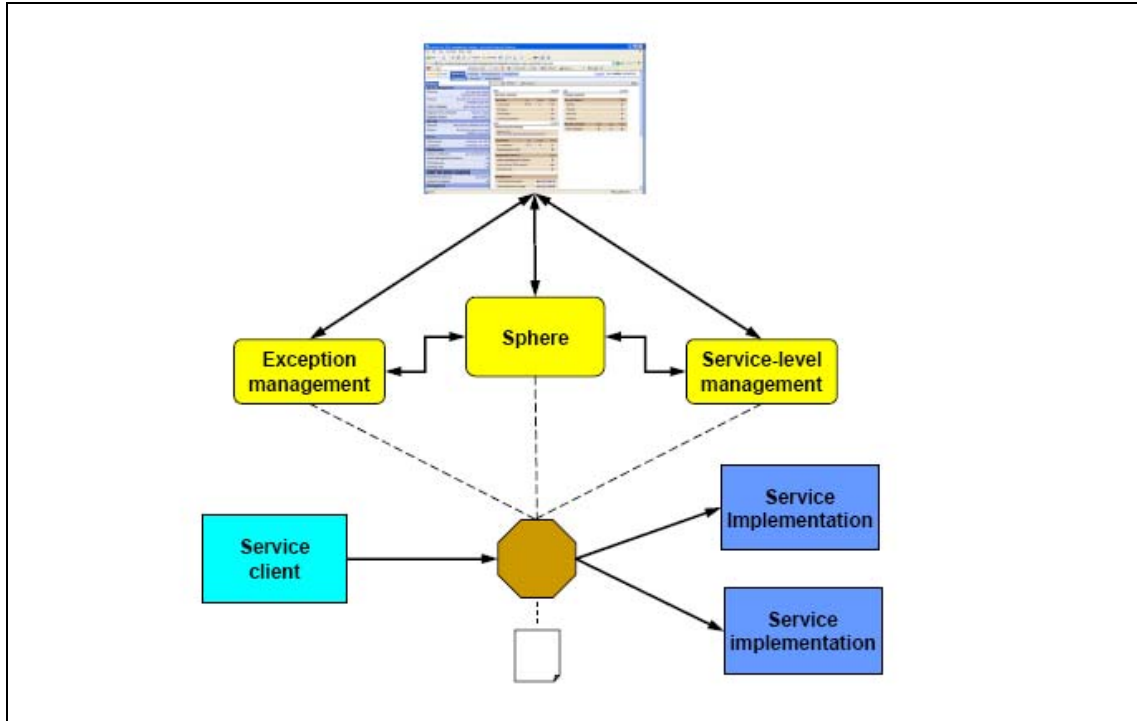
以下為 AmberPoint 如何達到以上功能的方法圖示：



透過以上之圖示可以了解到，對於 service 的存取中間必須建立一個管理上的中介點，實際上對應到的是 Agent 元件。

### 基本管理元件

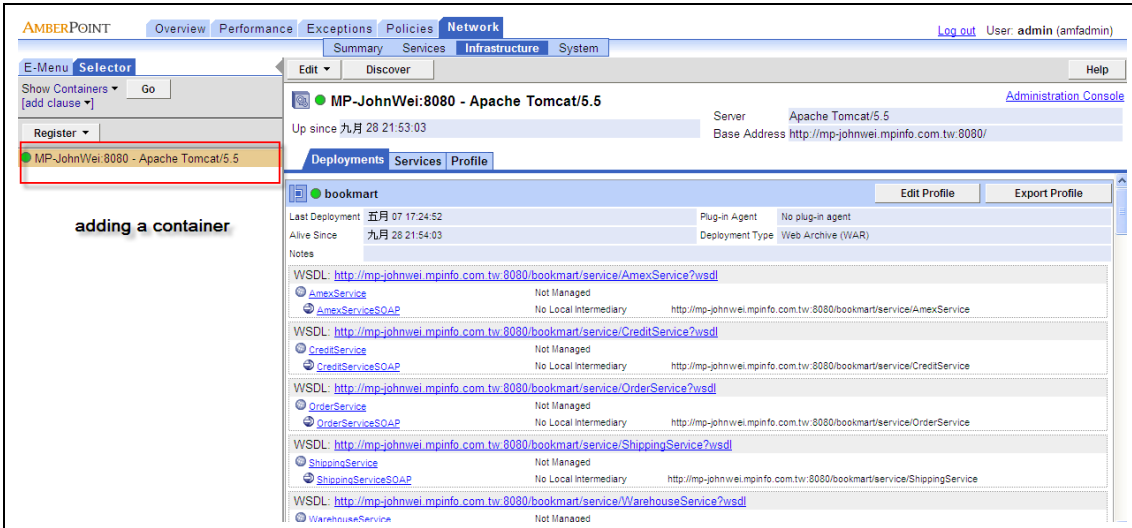
AMS 管理上的基本元件分為 Sphere、Exception Management 及 Service-Level Management 三個部份



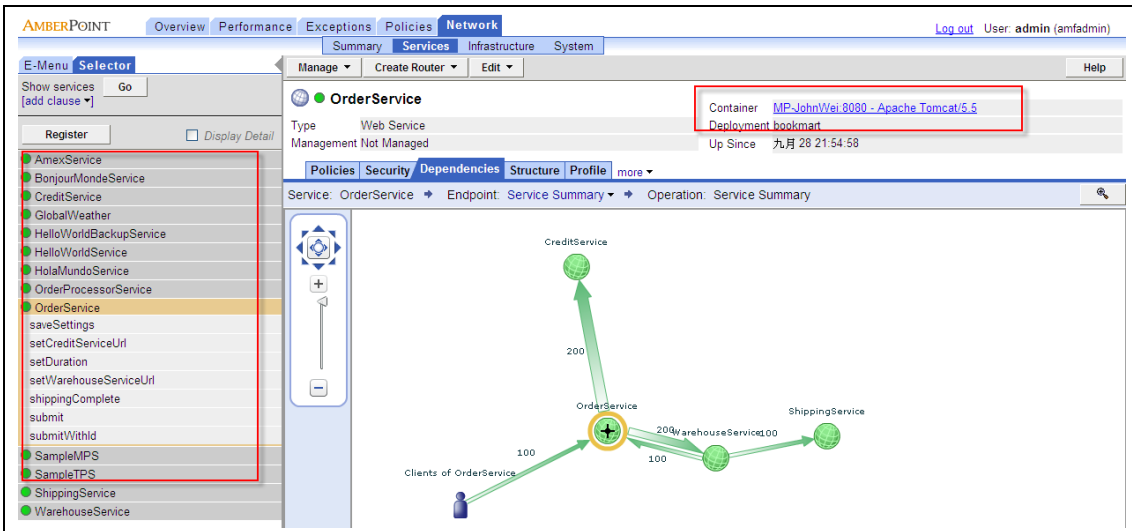
- Sphere  
掌管整個 system wide 的 config、policy 等
- Exception Management  
service 間的 correlation、correlation 間的 message log 與 exception message
- Service-Level Management  
Service 在執行時期的效能資料與可得性的資料等

## Discover Service 機制

利用部署在各個 Java Application Server 上的"Container"進行自動 discover service 的功能，關於此種 Container base 的 discover 機制的支援，可以適用在 WebLogic、Websphere 與 Tomcat 上面



This screenshot shows the AMBERPOINT interface with the 'Discover' tab selected. On the left, a list of containers is shown, with 'MP-JohnWei:8080 - Apache Tomcat/5.5' highlighted and a red box around it. The text 'adding a container' is overlaid on this area. The main panel displays details for the 'bookmart' deployment, including its WSDLs and associated services like AmexService, CreditService, OrderService, ShippingService, and WarehouseService.



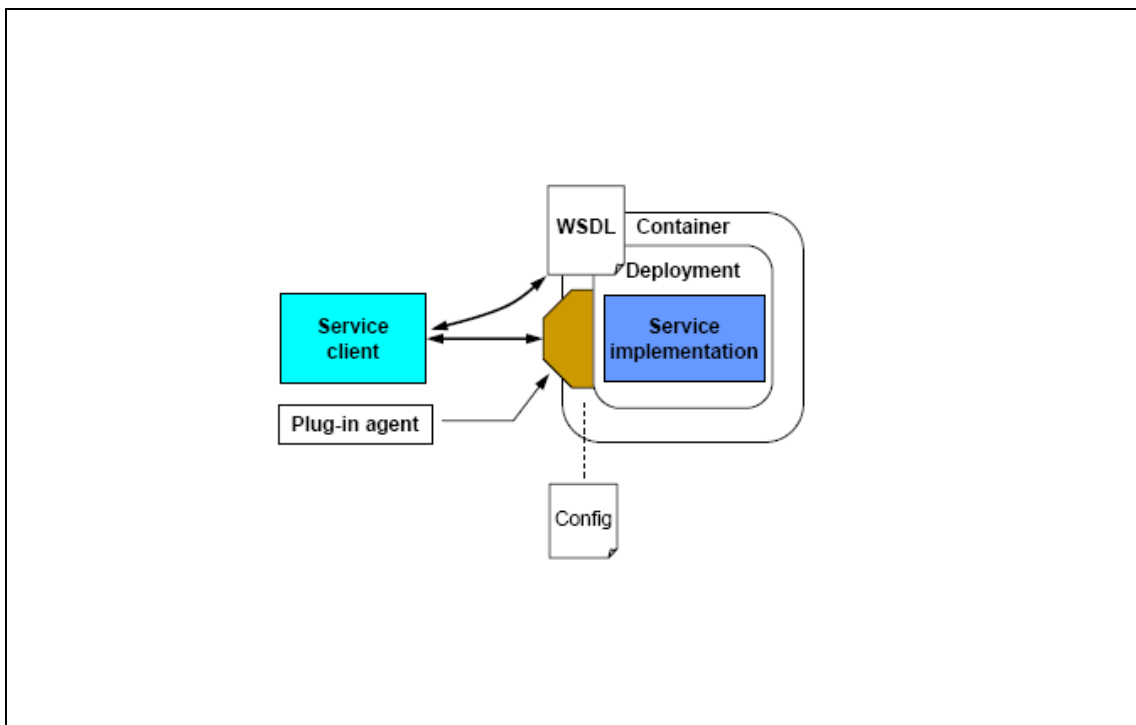
This screenshot shows the AMBERPOINT interface with the 'OrderService' selected. A red box highlights the 'Container' field, which is set to 'MP-JohnWei:8080 - Apache Tomcat/5.5' and the 'Deployment' field, which is 'bookmart'. Below this, a dependency diagram is displayed, showing 'OrderService' at the center with arrows pointing to 'CreditService' (weight 200), 'WarehouseService' (weight 100), and 'ShippingService' (weight 100). 'Clients of OrderService' is also shown with a weight of 100.

### 利用 Agent 實施管理機制

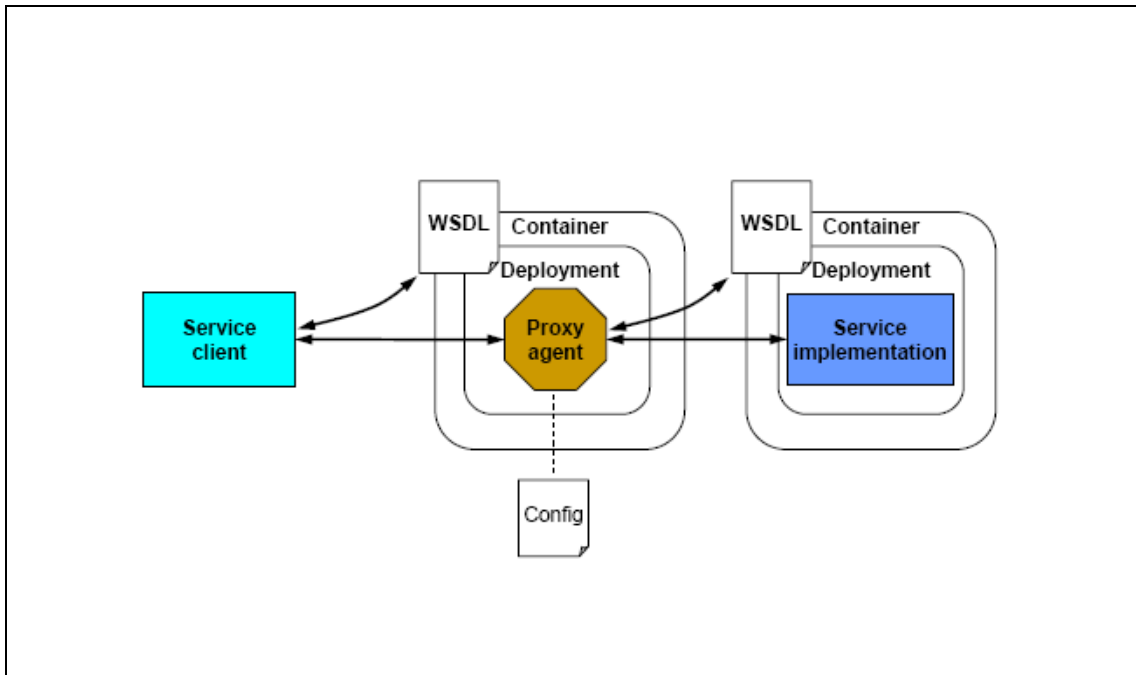
在 web service 的 traffic 之間建立一個 agent 作為實際上 web service 的代理，也因為此一機制，可以利用 agent 來監看、蒐集資料、修改實際傳輸到 web service 的內容，甚或進行流量控管的行為。

而 agent 主要可分為以下幾種類別：

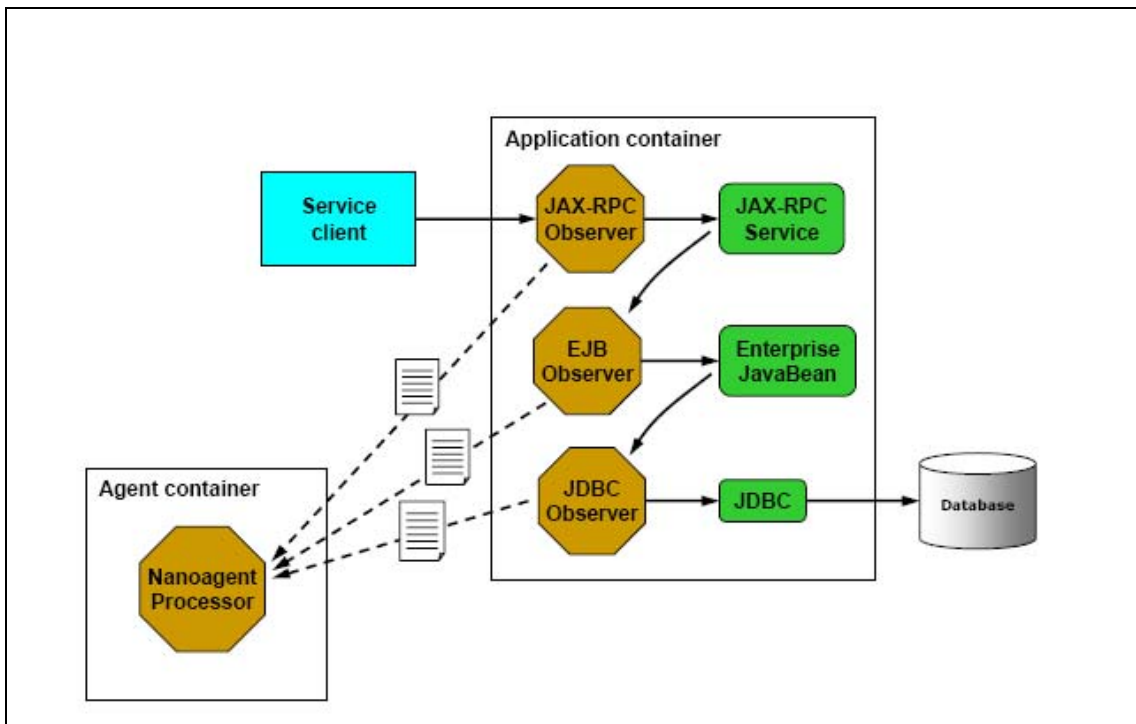
- Plug-in Agent
  - 利用 servlet filter 或 jax-rpc handler 來實作(IIS 上則為一個 http module)
  - Web service 的位置不變
  - 需調整 web service 的佈署檔



- Proxy Agent
  - 利用部署一個 proxy 的 web application 達成實作
  - Web service 的位置需要變更為 Proxy 的位置
  - Proxy 負責 forward request 到實際的 web service 端

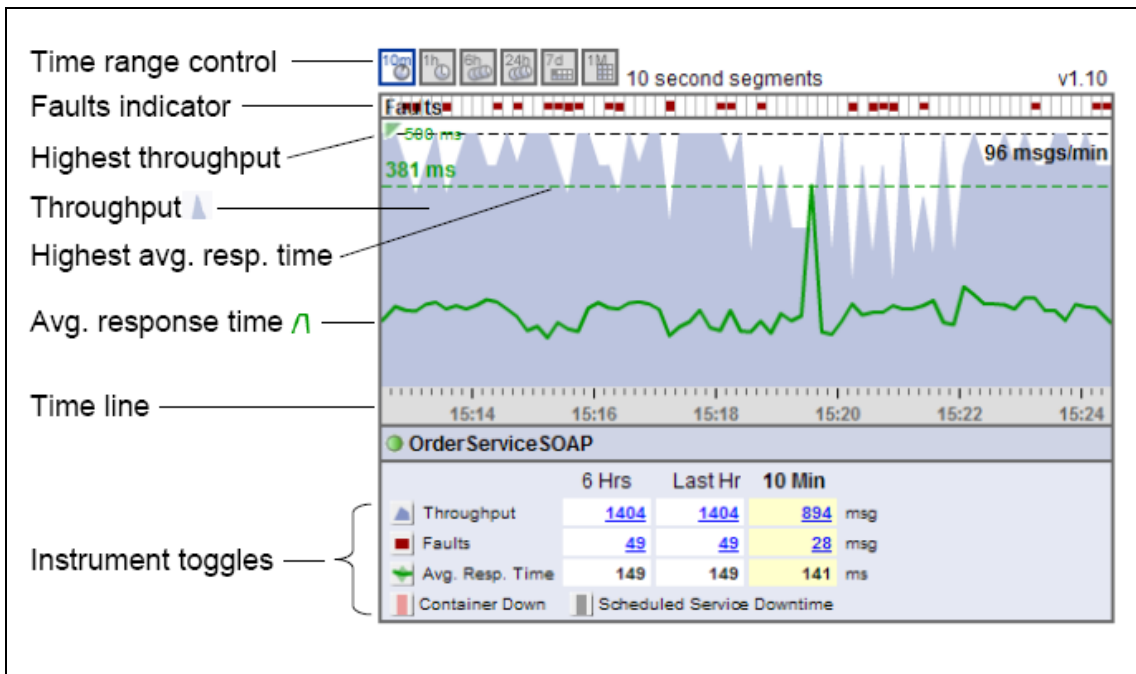
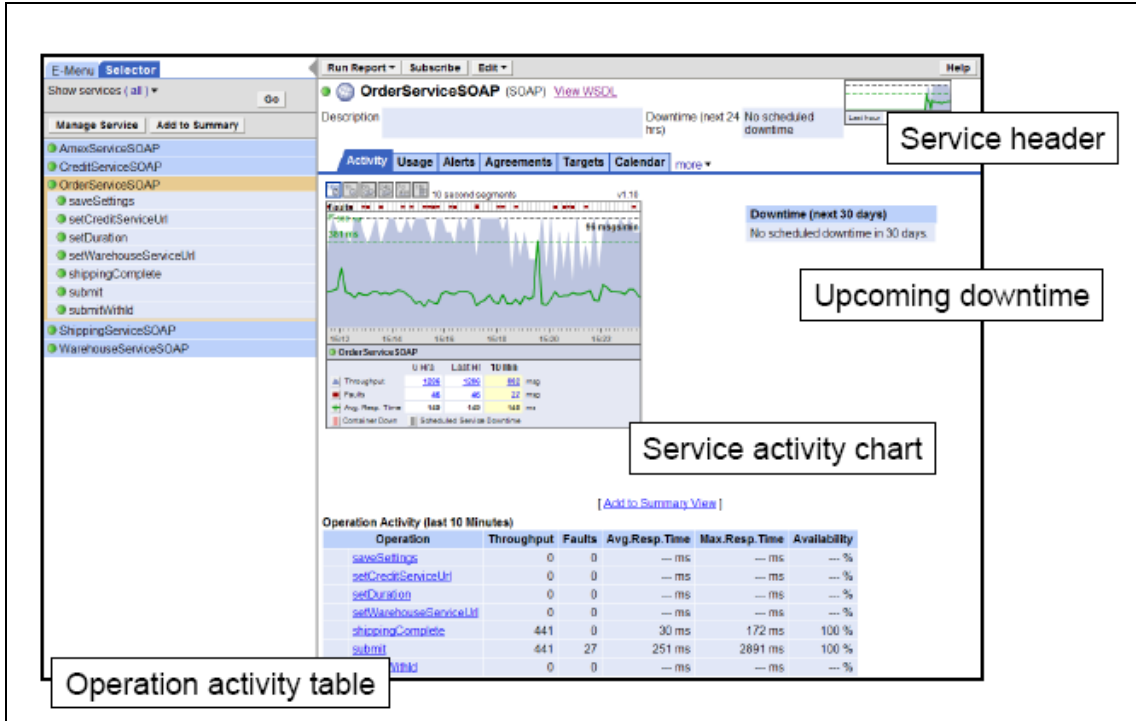


- Nano Agent
  - 分為 observer 與 processor 兩個部份，observer 負責捕捉 traffic 資料、產生 service 描述檔及建置 SOAP 訊息；processor 負責分析被捕捉的 traffic 資料
  - 可以 monitor non-web service 元件的 traffic，例如 EJB



監看與蒐集效能、呼叫失敗資料與紀錄呼叫的內容

Service 管理首要的課題在於了解 service 呼叫的效能、了解呼叫失敗的環節等及紀錄呼叫的內容，AMS 亦提供了方便的管理介面

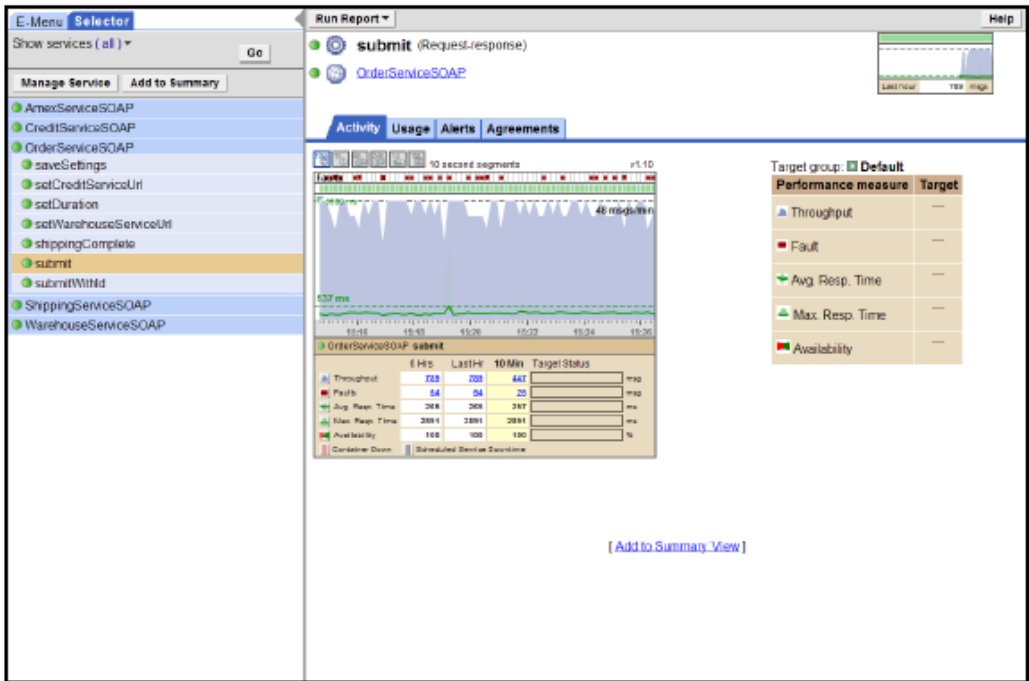


Time scale matches chart

**Operation Activity (last 10 Minutes)**

Operation	Throughput	Faults	Avg.Resp.Time	Max.Resp.Time	Availability
<a href="#">saveSettings</a>	0	0	--- ms	--- ms	--- %
<a href="#">setCreditServiceUrl</a>	0	0	--- ms	--- ms	--- %
<a href="#">setDuration</a>	0	0	--- ms	--- ms	--- %
<a href="#">setWarehouseServiceUrl</a>	0	0	--- ms	--- ms	--- %
<a href="#">shippingComplete</a>	447	0	30 ms	219 ms	100 %
<a href="#">submit</a>	447	26	258 ms	2891 ms	100 %
<a href="#">submitWithld</a>	0	0	--- ms	--- ms	--- %

Links to operations



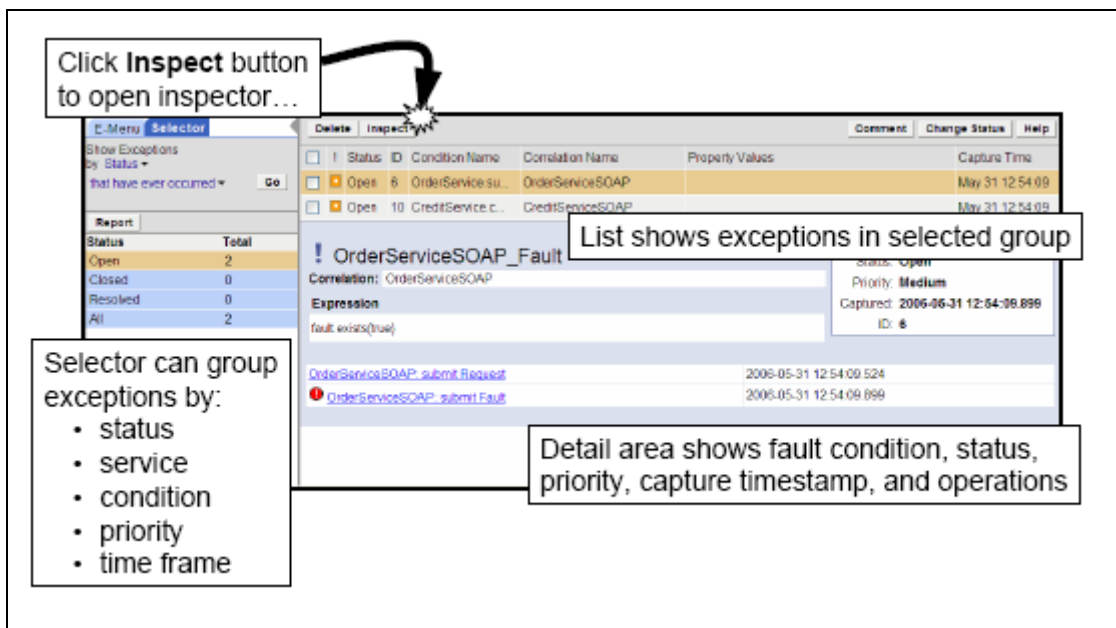
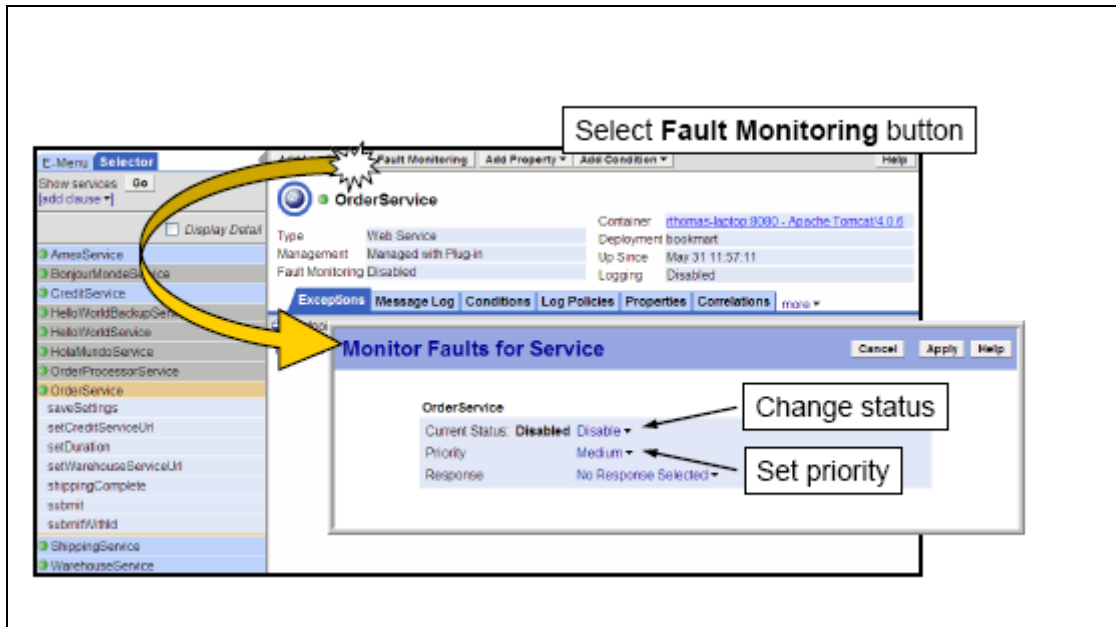
The screenshot shows a monitoring interface with a left-hand menu listing services like AmexServiceSOAP, CreditServiceSOAP, OrderServiceSOAP, and WarehouseServiceSOAP. The 'submit' service is selected. The main area displays a 'Run Report' for 'submit (Request-response)' with tabs for Activity, Usage, Alerts, and Agreements. A chart shows activity over time with a peak of 48 requests/min. A table below the chart provides performance metrics:

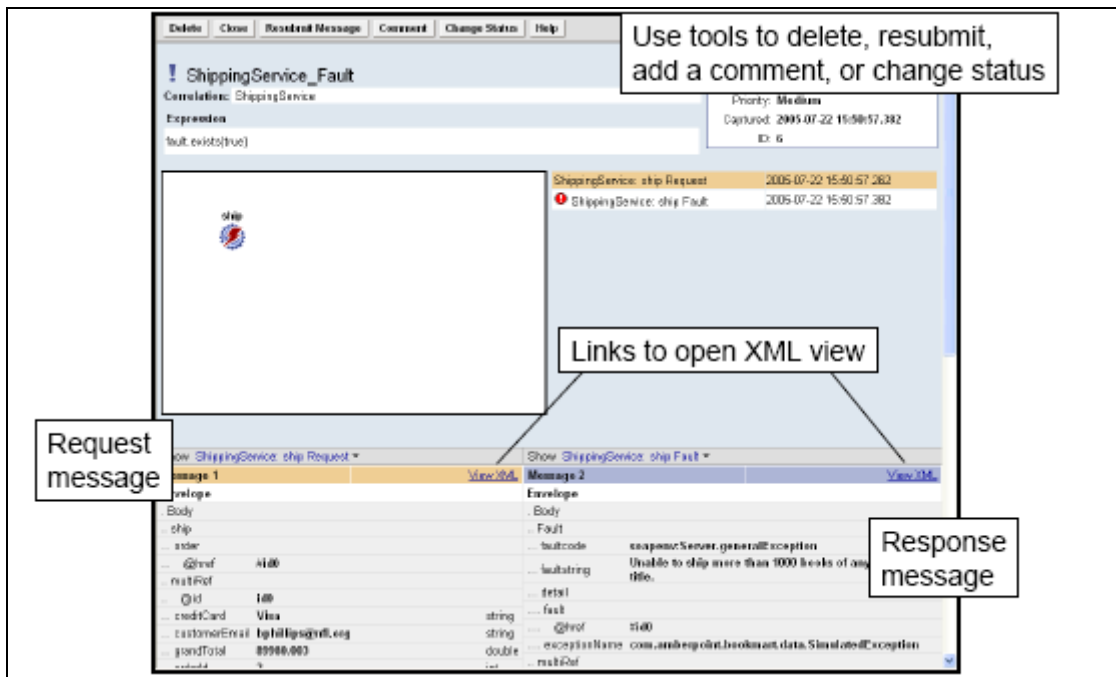
	1 Hr	LastHr	10 Min	Target/Status
Throughput	123	205	447	msd
Faults	54	54	26	msd
Avg. Resp. Time	258	258	257	ms
Max. Resp. Time	2891	2891	2891	ms
Availability	100	100	100	%

[ Add to Summary View ]

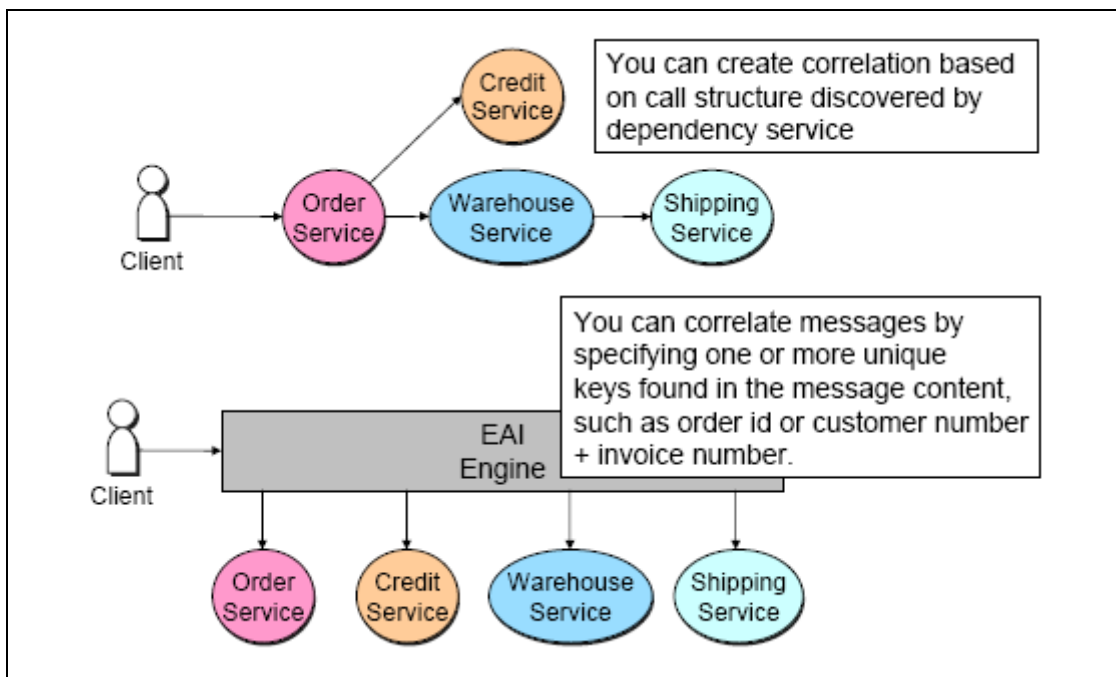
### 針對 Service Fault 的管理機制

可以配置 AMS 利用其監看 SOAP 失敗的訊息並回報 exception management 系統，並且可以檢視錯誤訊息，亦可利用 message inspector 去註解訊息、改變訊息狀態甚至重新 submit 改變後之訊息

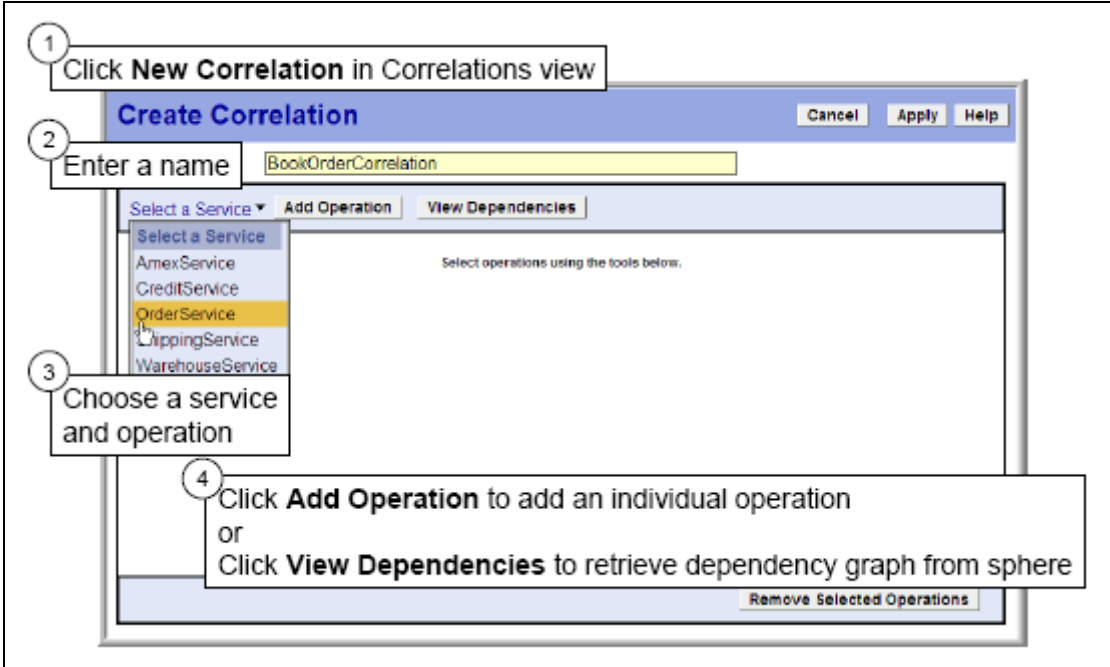




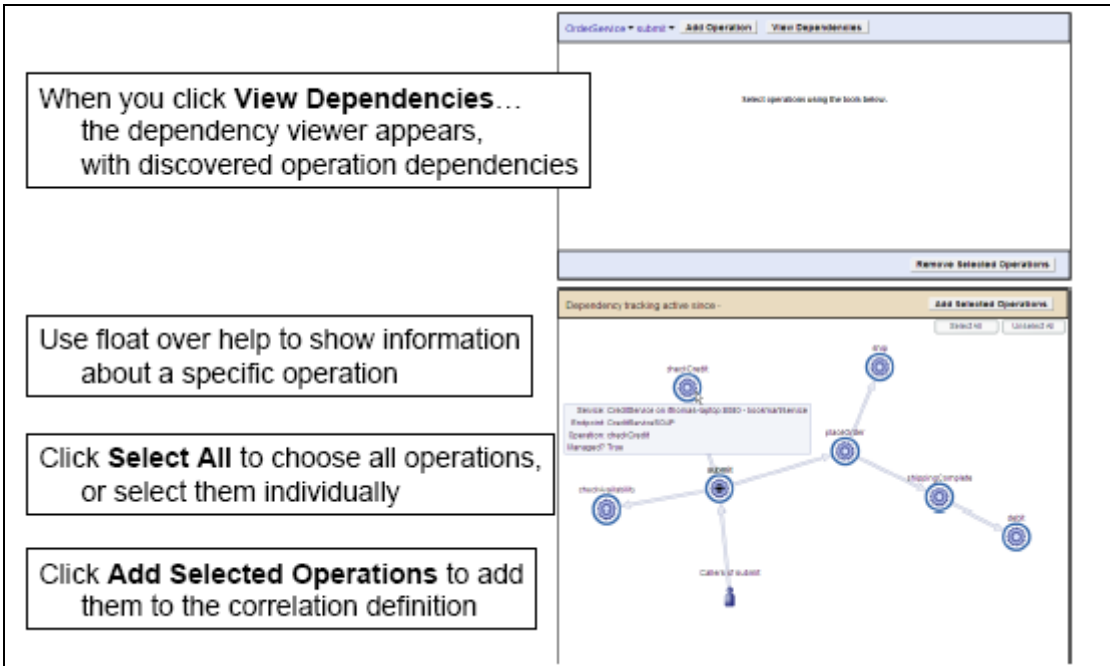
利用 **service correlation** 將相關連的 **service operation** 定義為一個群組  
 可以利用 **service** 呼叫的順序來定義 **correlation**(預設)，亦可以使用 **message** 的 **data** 內容來定義關聯



除了監看效能，亦可按照一個 correlation set 的方式檢視錯誤訊息，也可按照 correlation set 為單位收集 log 訊息



1 Click **New Correlation** in Correlations view  
 2 Enter a name   
 3 Choose a service and operation  
 4 Click **Add Operation** to add an individual operation  
 or  
 Click **View Dependencies** to retrieve dependency graph from sphere

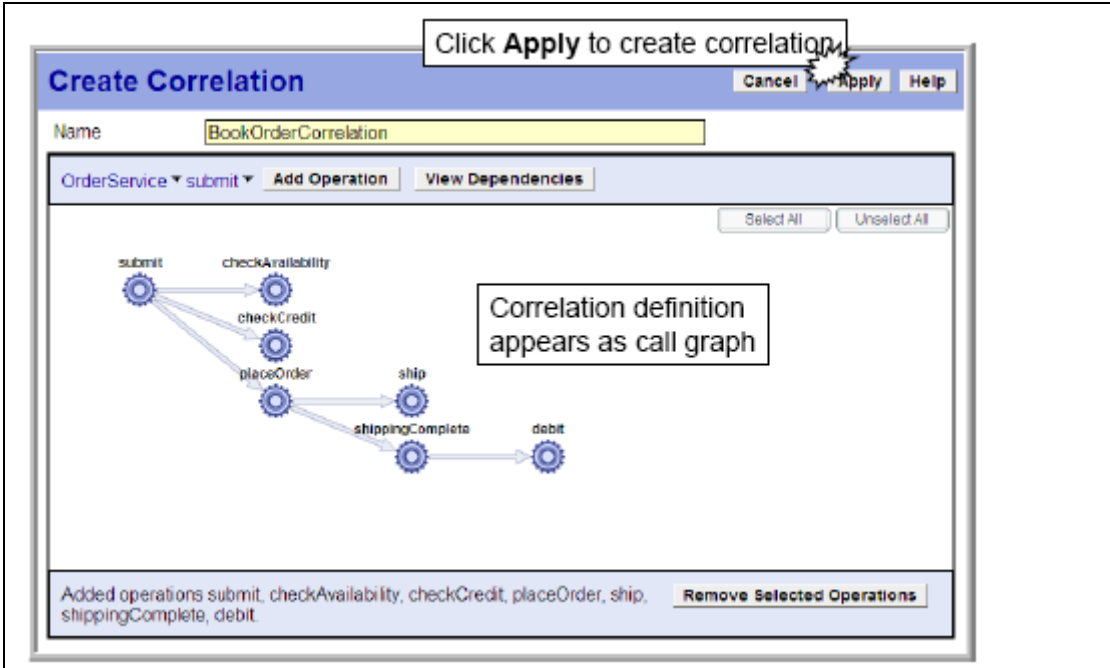


When you click **View Dependencies...** the dependency viewer appears, with discovered operation dependencies

Use float over help to show information about a specific operation

Click **Select All** to choose all operations, or select them individually

Click **Add Selected Operations** to add them to the correlation definition



Click **Apply** to create correlation.

**Create Correlation** Cancel Apply Help

Name

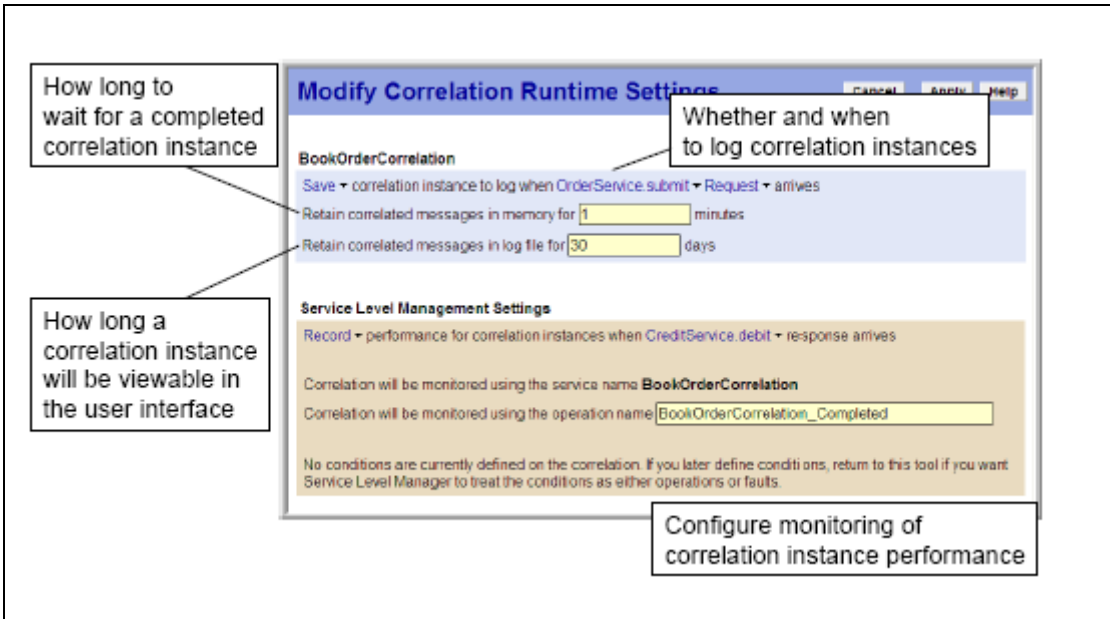
OrderService ▾ submit ▾ Add Operation View Dependencies

Select All Unselect All

submit checkAvailability  
checkCredit  
placeOrder ship  
shippingComplete debit

Correlation definition appears as call graph

Added operations submit, checkAvailability, checkCredit, placeOrder, ship, shippingComplete, debit. Remove Selected Operations



How long to wait for a completed correlation instance

How long a correlation instance will be viewable in the user interface

**Modify Correlation Runtime Settings** Cancel Apply Help

BookOrderCorrelation

Save correlation instance to log when OrderService.submit ▾ Request ▾ arrives

Retain correlated messages in memory for  minutes

Retain correlated messages in log file for  days

Service Level Management Settings

Record performance for correlation instances when CreditService.debit ▾ response arrives

Correlation will be monitored using the service name **BookOrderCorrelation**

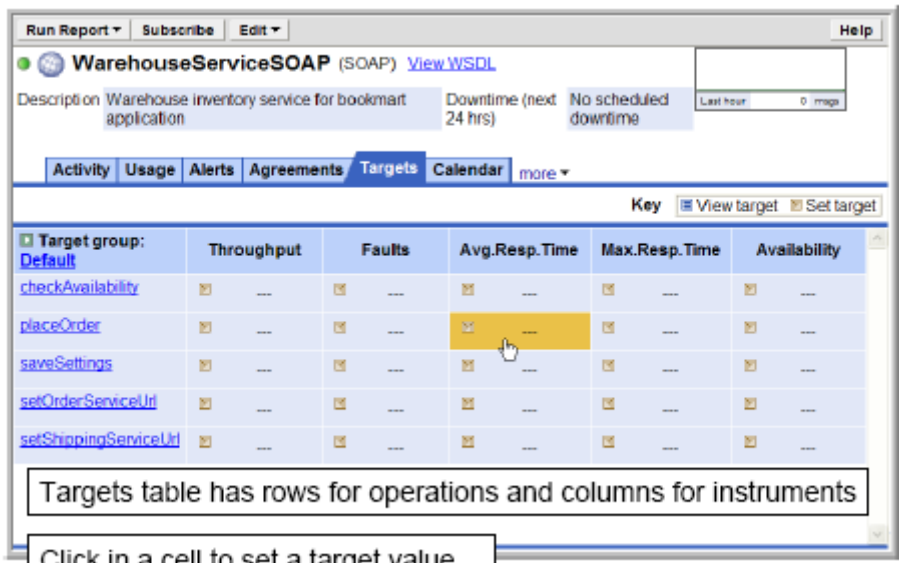
Correlation will be monitored using the operation name

No conditions are currently defined on the correlation. If you later define conditions, return to this tool if you want Service Level Manager to treat the conditions as either operations or faults.

Configure monitoring of correlation instance performance

### 設定警告機制

AMS 可以針對個別 service 定義目標，例如平均回應時間上限為何、呼叫失敗次數上限為何等，一旦未達目標即會出現警告訊息，亦可針對此警告設定通知機制，例如 email 通知管理者



Targets table has rows for operations and columns for instruments

Click in a cell to set a target value...



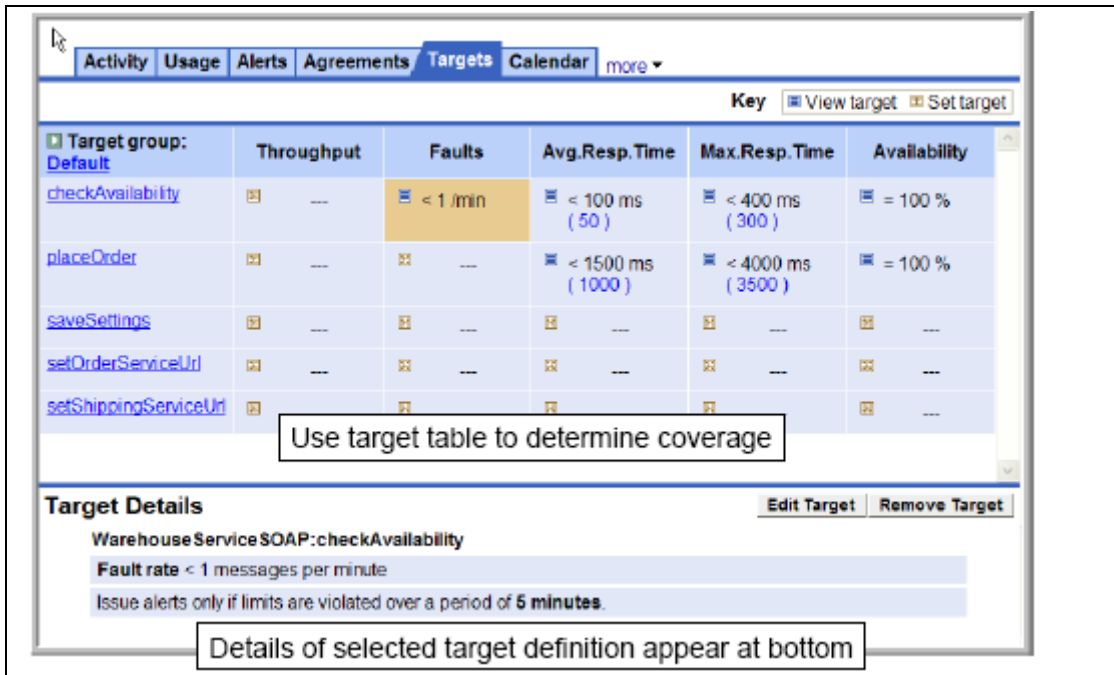
Specify target violation condition

Use collected baseline data for guidance

Choose sensitivity

Add warning conditions as desired

Baselines	Last hour	Last day	Last week	Last month
Average response time	--	--	513	354
Maximum response time	--	--	4469	4469



Activity Usage Alerts Agreements **Targets** Calendar more ▾

Key  View target  Set target

Target group: Default	Throughput	Faults	Avg.Resp.Time	Max.Resp.Time	Availability
<a href="#">checkAvailability</a>	---	< 1 /min	< 100 ms ( 50 )	< 400 ms ( 300 )	= 100 %
<a href="#">placeOrder</a>	---	---	< 1500 ms ( 1000 )	< 4000 ms ( 3500 )	= 100 %
<a href="#">saveSettings</a>	---	---	---	---	---
<a href="#">setOrderServiceUrl</a>	---	---	---	---	---
<a href="#">setShippingServiceUrl</a>	---	---	---	---	---

Use target table to determine coverage

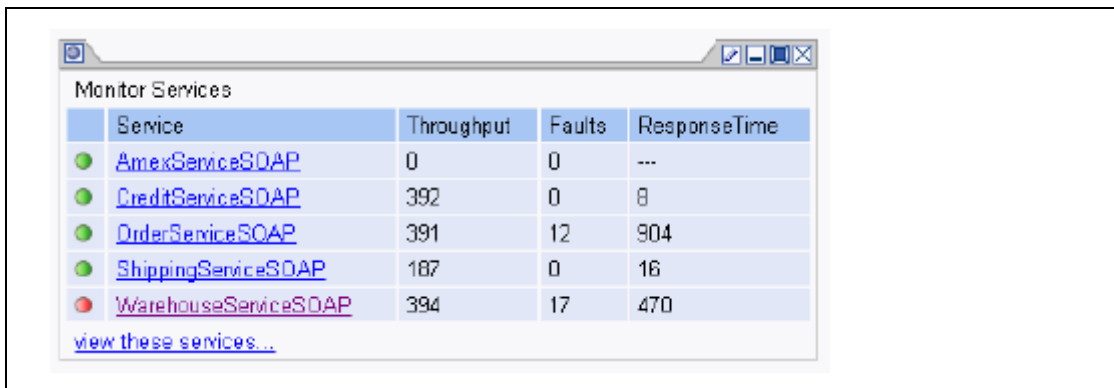
**Target Details** Edit Target Remove Target

Warehouse Service SOAP: checkAvailability

Fault rate < 1 messages per minute

Issue alerts only if limits are violated over a period of 5 minutes

Details of selected target definition appear at bottom



Monitor Services

Service	Throughput	Faults	ResponseTime
<a href="#">AmexServiceSOAP</a>	0	0	---
<a href="#">CreditServiceSOAP</a>	392	0	8
<a href="#">OrderServiceSOAP</a>	391	12	904
<a href="#">ShippingServiceSOAP</a>	187	0	16
<a href="#">WarehouseServiceSOAP</a>	394	17	470

[view these services...](#)



**Edit Email Settings** Cancel Apply Help

**Primary**

Email address

Format

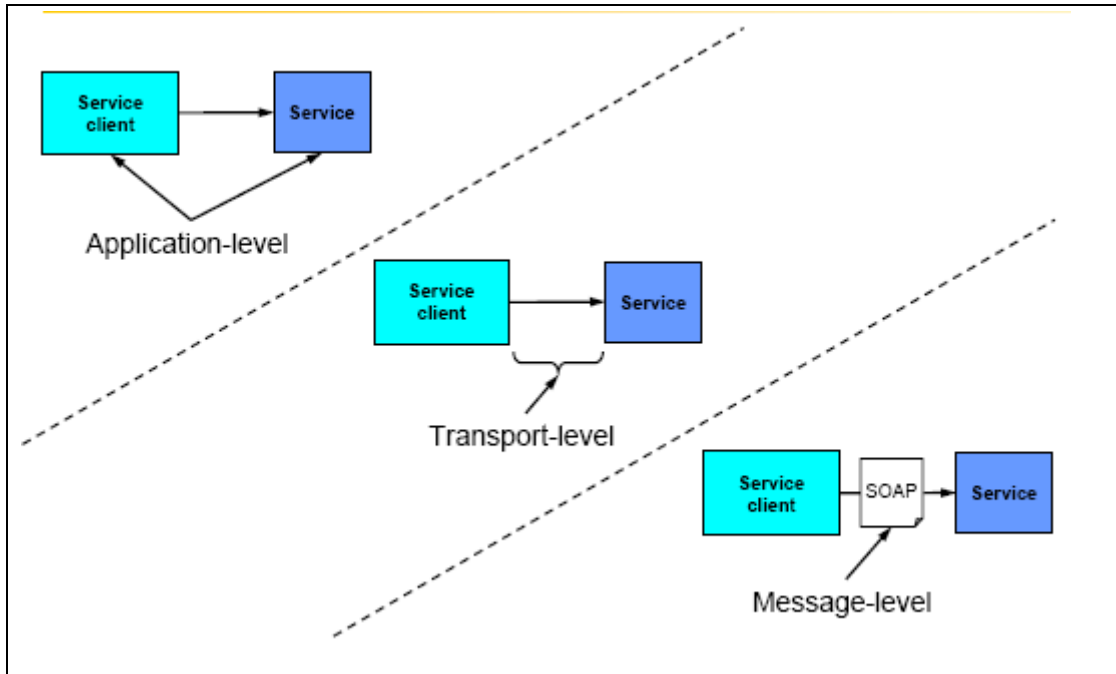
**Secondary**

Email address

Format

### 利用 Agent apply security policy

可以利用 agent 對原本無加密機制之 web service 提供加密解密的功能，不需修改原本 web service 的程式或是設定還可支援傳輸層級的 security 功能，亦可提供存取 service 權限的控管



### 結語

AmberPoint Management System 提供了全方位的管理功能，除了效能監控、錯誤分析外，尚有管理者所需的 threshold 警告與通知功能，甚至可以為原本規劃之初設計不周全的 web service 加上 security 的機制，確為企業 IT 服務提供了管理上的好幫手，亦可由他來提升企業整體的 IT 服務品質，善加利用可以替企業的 IT 管理人員與 IT 服務的使用者創造雙贏的局面。