Exploring Pure Application System Patterns

What does it take to maximize your investment?

WebSphere User Group, March 2013

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Complexity simplified

Agenda

- Slides
  - Pure Systems
  - VSPs and VAPs
  - VSP construction
  - VAP construction
  - Pattern-readiness
- Demo
  - Deploy
  - … check …
  - … check …
  - … check …
  - … check …
  - Execute

Demo

- Deploy: pick a number

- *… running on a VPDK…* a virtual virtualization architecture!*

* Virtual Pattern Development Kit

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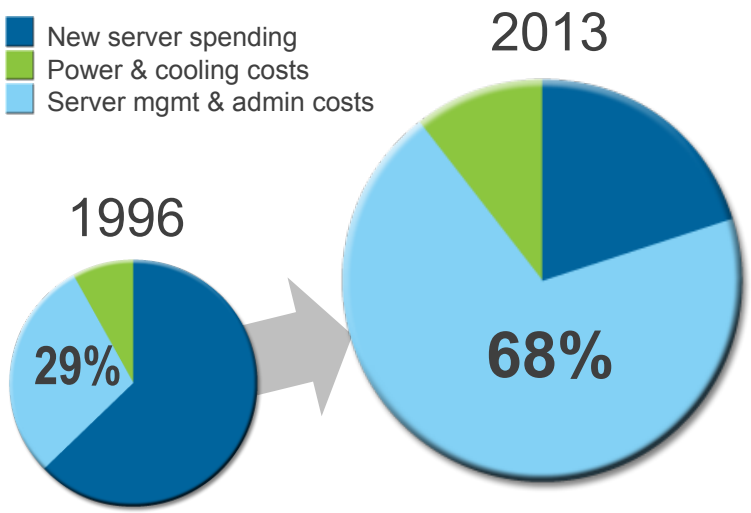
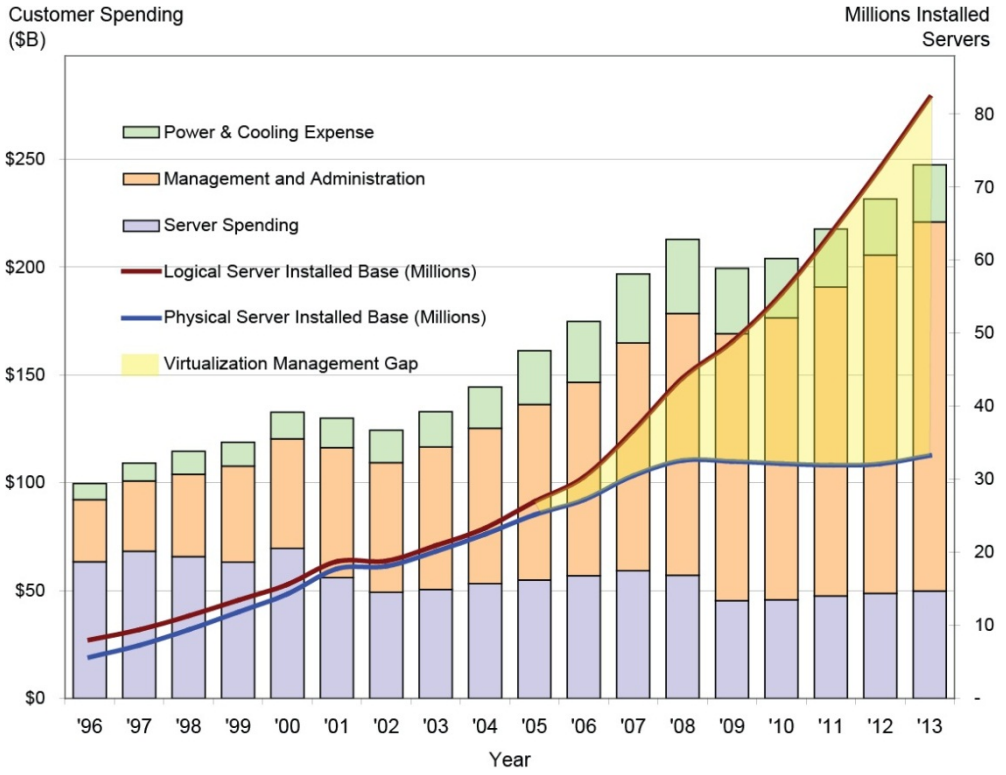
Do you have a cost code?

- By end 2013, 68% of IT operating costs will be management and admin
  - Source: IDC report

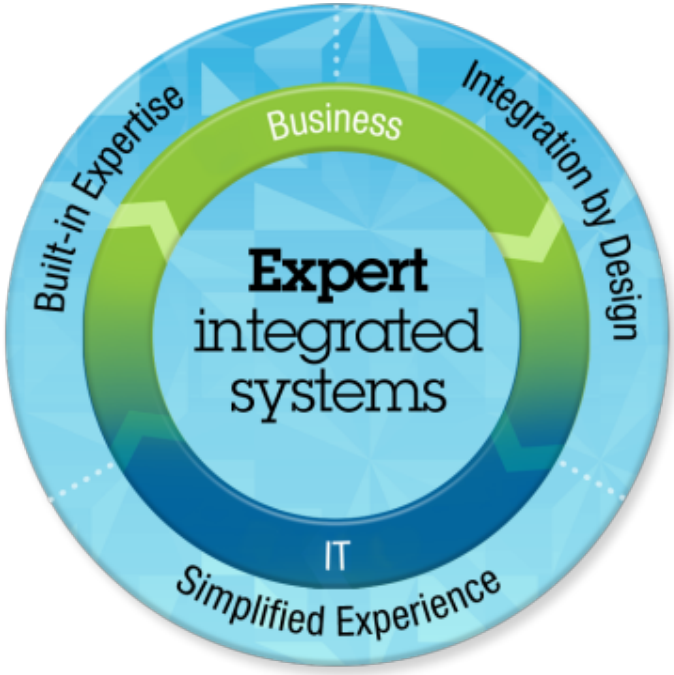




Expert Integrated Systems

- Flexible, Elastic and Simple (built for Cloud)

Capturing and automating what experts do: from hardware to apps



Deeply integrating and tuning hardware and software

Making the IT lifecycle easier: integrated management of the entire system

Benefits

- Massively accelerated deployment: **30 minutes from 3 months**
  - Spin up new systems on demand, jettison them just as quickly
- Standardised deployment of complex multi-system solutions
  - Optimises and simplifies the entire solution stack
  - Direct support for *most* IBM middleware (including software version)
  - Identical repeatable deployments: much lower risk
  - **"A SysPlex for solutions on distributed platforms"**
- Cost and management time down by 30-35% *[IBM stat]*
  - One-click deployment
  - Source control of deployment artefacts
  - Scales (manually or automatically) to meet business demand
  - **"One management platform to conquer all"**: hardware, OS, middleware and application monitoring and maintenance in one console

IBM PureSystems Variants

PureFlex

Infrastructure

Delivering Infrastructure Services

PureApplication

Application Platform

Delivering Platform Services

PureData

Data Platform

Delivering Data Services

Demo

- Check status… once…

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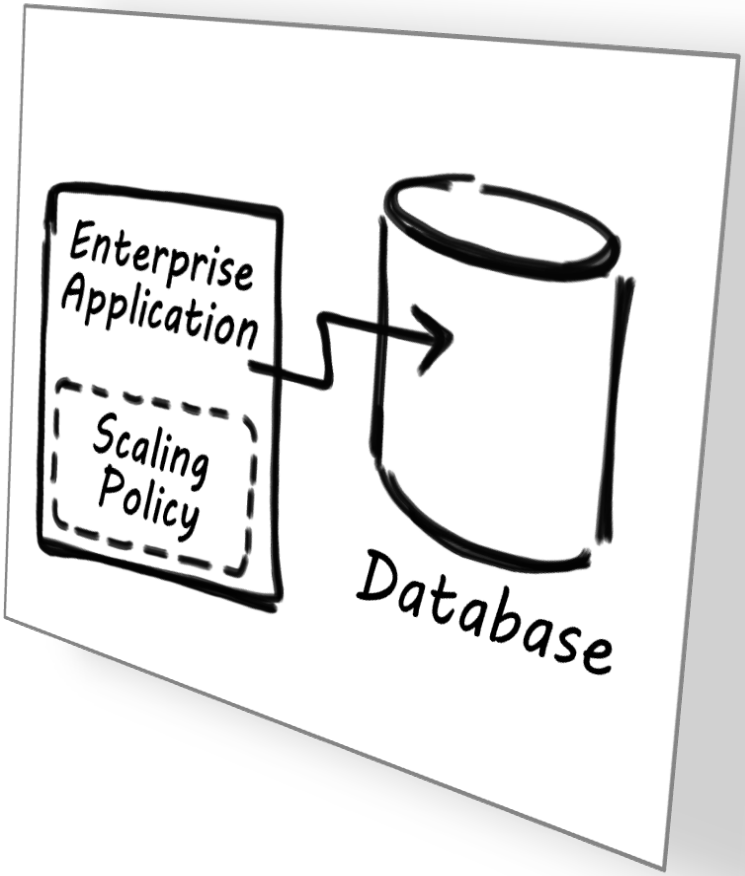
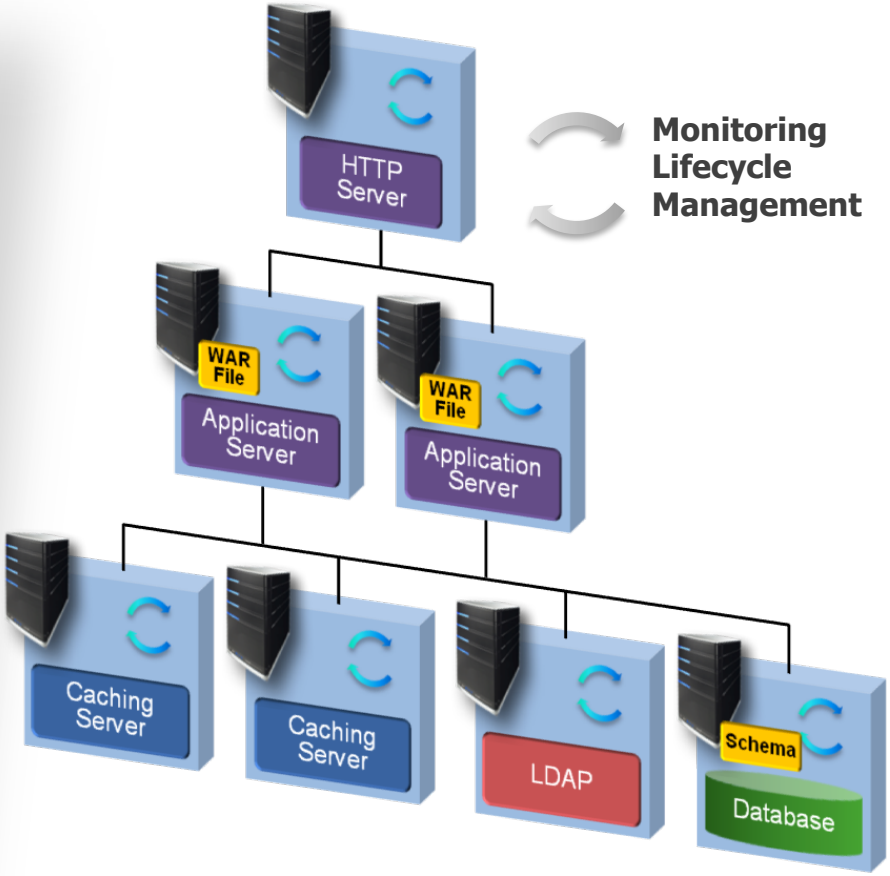
What is a Pattern?

- What the business asks for:

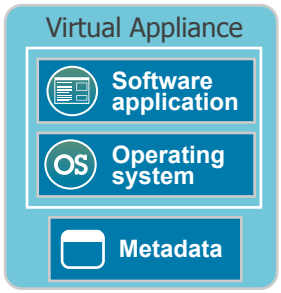


- What the business needs:



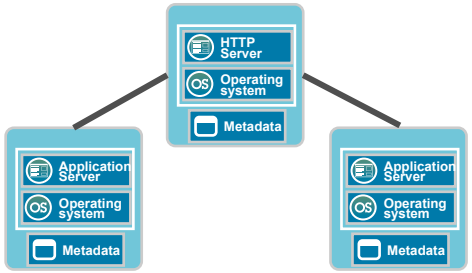
Pattern Variants

[Virtual Appliances]



- Standard software configuration on OS; extend/capture images
- Manual infrastructure-driven elasticity
- Traditional administration and management model
- **Existing apps:** ***existing TCO***

Virtual Systems



- Automated deployment of middleware topologies
- Manual application and infrastructure-driven elasticity
- Traditional administration and management model
- **Virtualized apps:** ***improved TCO***

Virtual Applications

- Highly automated deploys (expert patterns)
- Automatic business policy-driven elasticity, using workload management data
- Built for the cloud environment
- **Cloud apps:** ***best TCO***

Application maturity needs to increase

Demo

- Check status… twice…

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VSP Construction

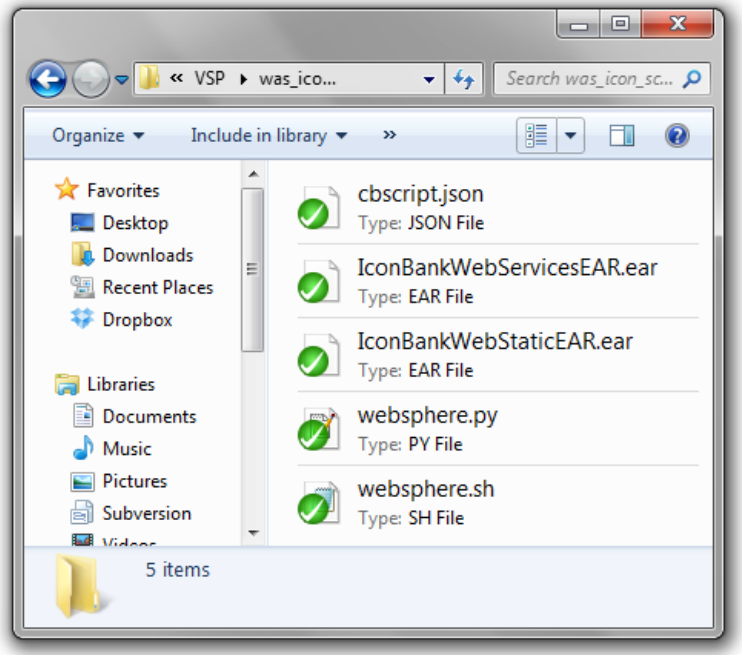
- VSP components
  - Parts
  - Script packages
- Demo application
  - Purpose
  - Architecture
- Build a VSP

VSP Components

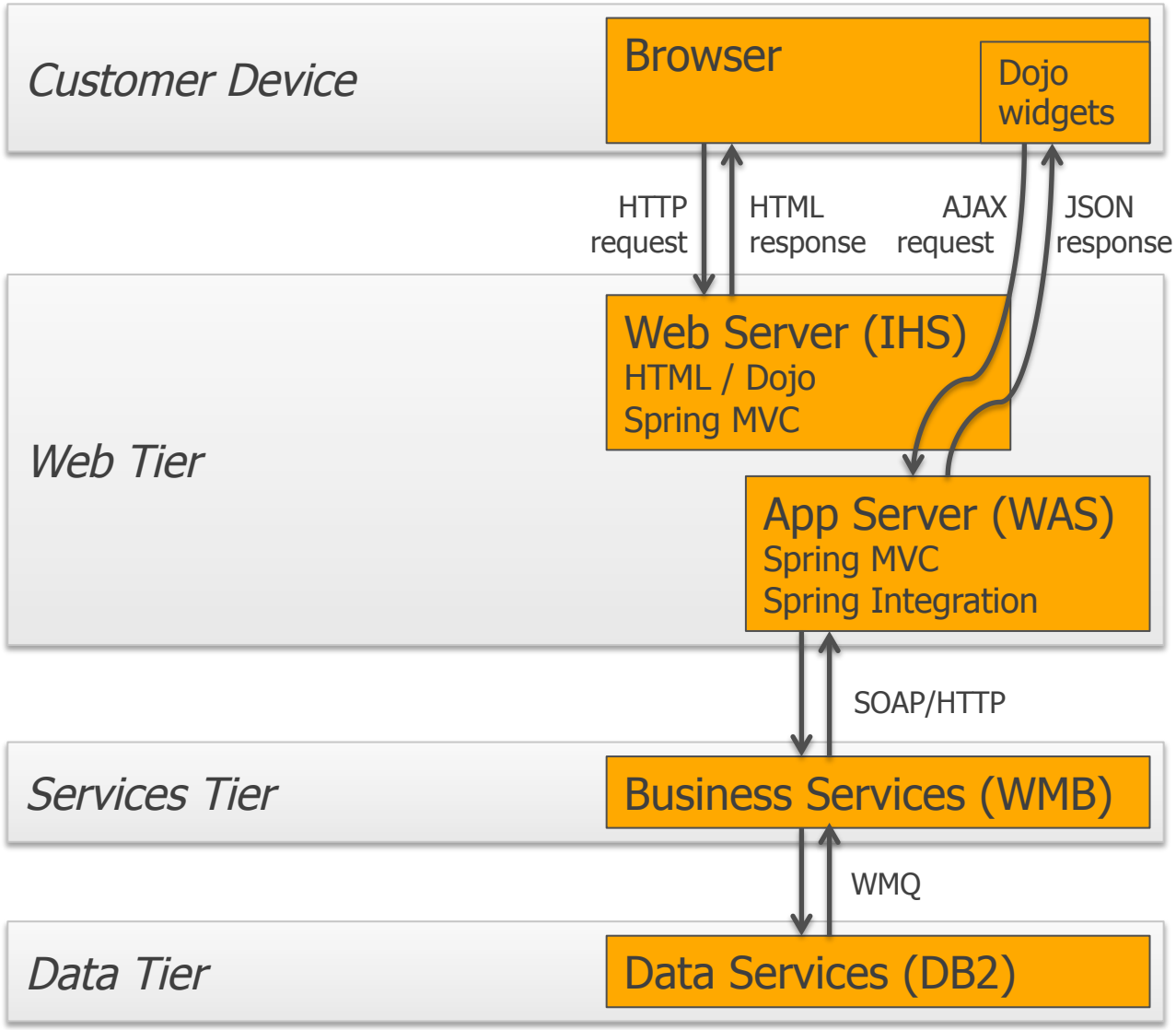
- Parts
  - Effectively VAs: hypervisors, or images extended using ICCT (Image Construction and Composition Tool)
  - Software version drop-down for ease of maintenance / upgrade
- Parametric references for Parts
  - Variables which are exposed at Pattern level
  - Used to connect the application fragments together
  - Found in /etc/virtualimage.properties on a running VA
- Script packages
  - The bundled fragment of the application running on a Part (e.g. an EAR file plus its wsadmin deployment scripts)
  - cbscript.json

VSP Script: *cbscript.json*

```
{
    "name": "Configure WebSphere",
    "version": "1.0.0",
    "description": "BANK VSP: WAS general script package",
    "command": "sh /tmp/BANK_VSP/websphere.sh",
    "log": "/tmp/BANK_VSP",
    "location": "/tmp/BANK_VSP",
    "timeout": "0",
    "keys":
    [
        {
            "scriptkey": "SERVER_NAME",
            "scriptvalue": "server1",
            "scriptdefaultvalue": "server1"
        },
        {
            "scriptkey": "WEB_SVR_NAME",
            "scriptvalue": "webserver1",
            "scriptdefaultvalue": "webserver1"
        },
        {
            "scriptkey": "WMB_SRV_HOST",
            "scriptvalue": "${AdvancedPart.hostname}.${AdvancedPart.domain}:7800/",
            "scriptdefaultvalue": "${AdvancedPart.hostname}.${AdvancedPart.domain}:7800/"
        },
        {
            "scriptkey": "WEB_SVR_HOST",
            "scriptvalue": "${IHSPart.hostname}.${IHSPart.domain}",
            "scriptdefaultvalue": "${IHSPart.hostname}.${IHSPart.domain}"
        }
    ]
}
```



Demo Application Architecture



Build a VSP

- Construct a VSP around the demo application
  - Script package upload
  - Pattern construction
  - Pattern configuration
  - Pattern deployment
- Cut to web UI…

Demo

- Check status… for the third time…

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VAP Construction

- Application Pattern Builder
  - Same as VPDK and IWD
- Direct support for EARs, databases, etc
  - Dynamic policies: scaling, routing, JVM, etc…
- Cut to web UI…
- ***Sara's presentation*** *(next in the Cloud track) will have much more detail on VAPs*

Demo

- Check status… this is getting tedious now…

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Is your application VSP-ready?

- Map your application to parts (nodes)
  - Need scripts to support deployment of application fragments
  - Remove infrastructure dependencies (e.g. IP addresses)
  - Application may need some tinkering… (e.g. same-origin policy)
- Application architect's role must expand
  - Easy to apply maintenance to a pattern… still needs testing
  - Must evangelise new software design standards
  - You still need clever folks to own the application and its pattern(s)
- VSPs can be tested and debugged in situ
  - Port the application fragments to new middleware versions, e.g. WAS 8.5: spin it up and go and play!
  - Test new parts of the app itself
  - Why not build and maintain patterns for "unit" testing specifically?

Is your application VAP-ready?

- Put another way: is your application *Cloud*-ready?
- Forces much more rigourous application design and implementation standards; application may require a complete rebuild
  - Possibly quite a significant development investment
- Application becomes far more opaque
  - Must expose the correct amount of configuration / points of variability
  - VAs running underneath are not accessible (no WAS admin, no WMQ logs)
  - Application must therefore expose a meaningful admin UI with debug capabilities
- Application must react appropriately to error conditions
  - Everything from "queue has filled up" to "application agent has seg-faulted")
  - Alert generation – what's the alerting / monitoring medium?
  - Expose error handling through application externals
- Message Broker VAP support… *pleeeease…*

- ***Sara's presentation*** *(next in the Cloud track) will have much more detail about building a plugin for a specific VAP constituent*

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Demo

- Walkthrough of running VSP instance
  - Deployment history
  - Script output
  - Node access
- Execute
  - [check C:\Windows\System32\drivers\etc\hosts for hostname]
- Four virtual nodes, running different IBM stack products, plus the configured application
  - ***Deployed in ~30 minutes***
  - Repeat on-demand with one click (almost)
  - Compare that with the traditional model: 6-8 weeks at least, with many different resources / teams needed
- Caveat: “transformative technology” drives fundamental business changes and challenges
  - Internal cross-charging, procurement, resource management

Summary

- Summary:
  - Pure Systems: introduction and value proposition
  - Patterns: VSPs and VAPs, construction
  - Application maturity and pattern-readiness
  - Icon Bank VSP Demo

- Questions?

- Thank you

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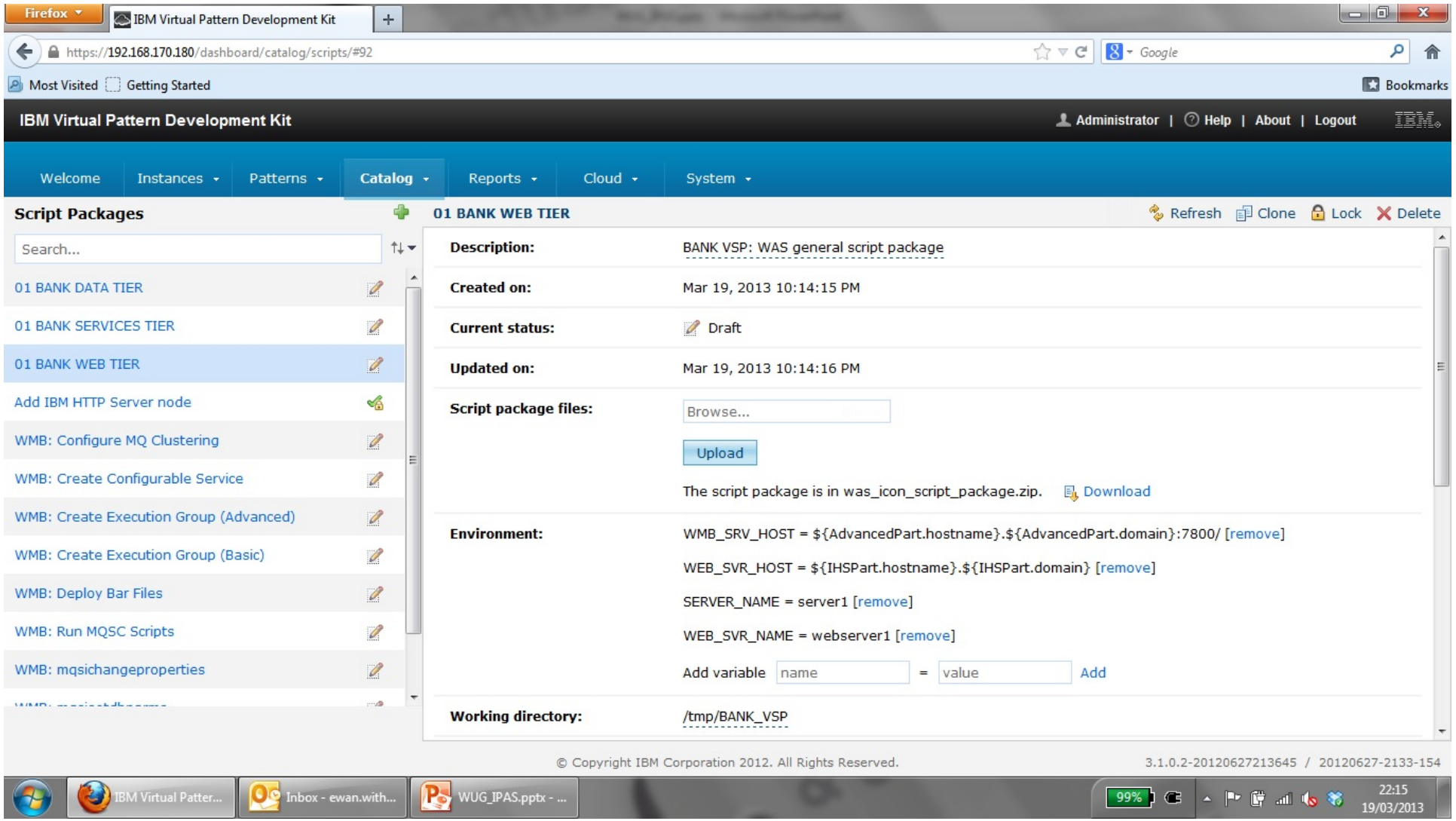
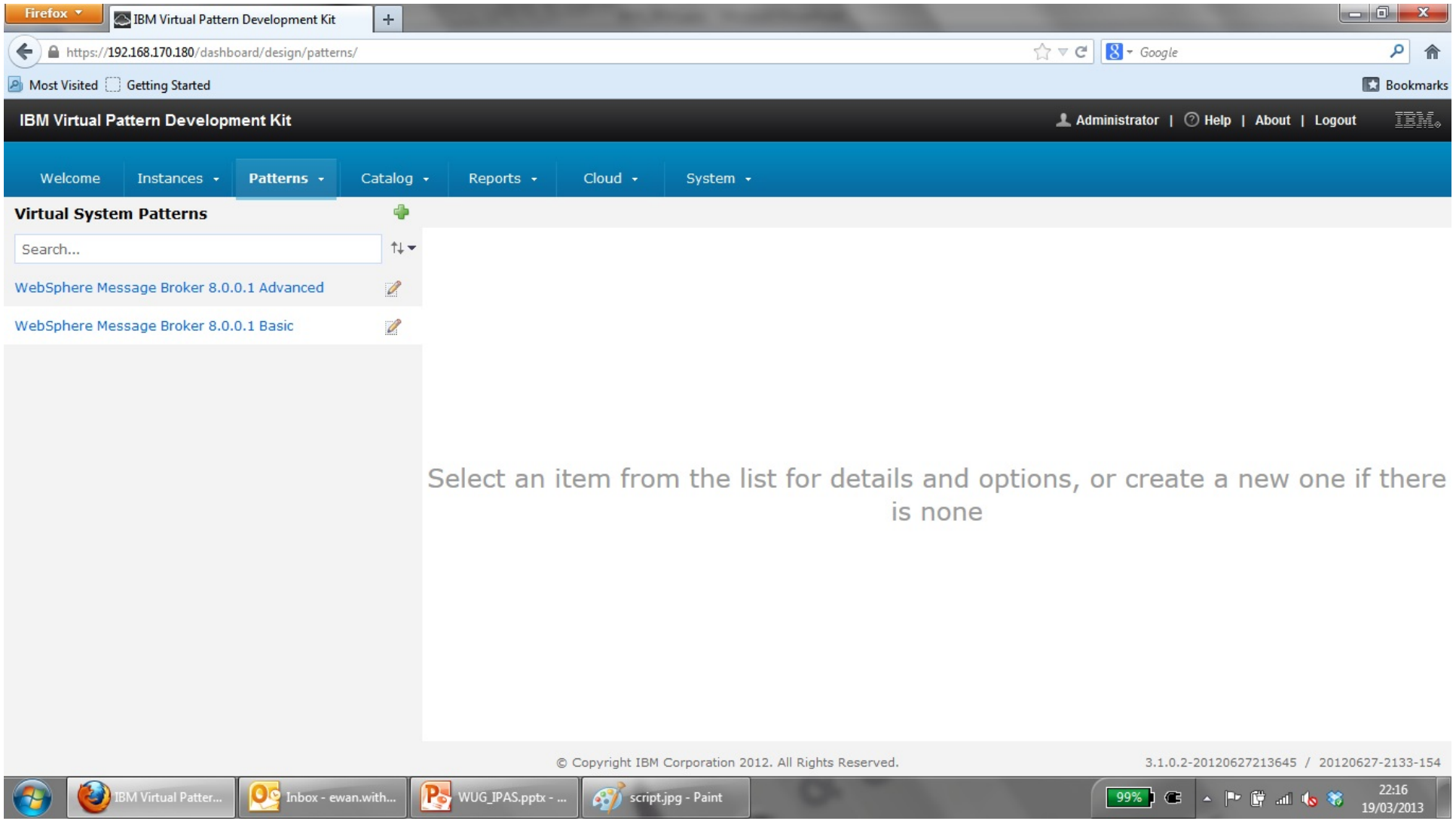
Appendix 1: VSP Screenshots

1. Script package
2. VSP creation
3. VSP nodes
4. VSP scripts
5. VSP node configuration
6. VSP script configuration
7. VSP deployment
8. Deployment initialisation
9. Deployment completion
10. Deployment history
11. Deployed nodes
12. Running application

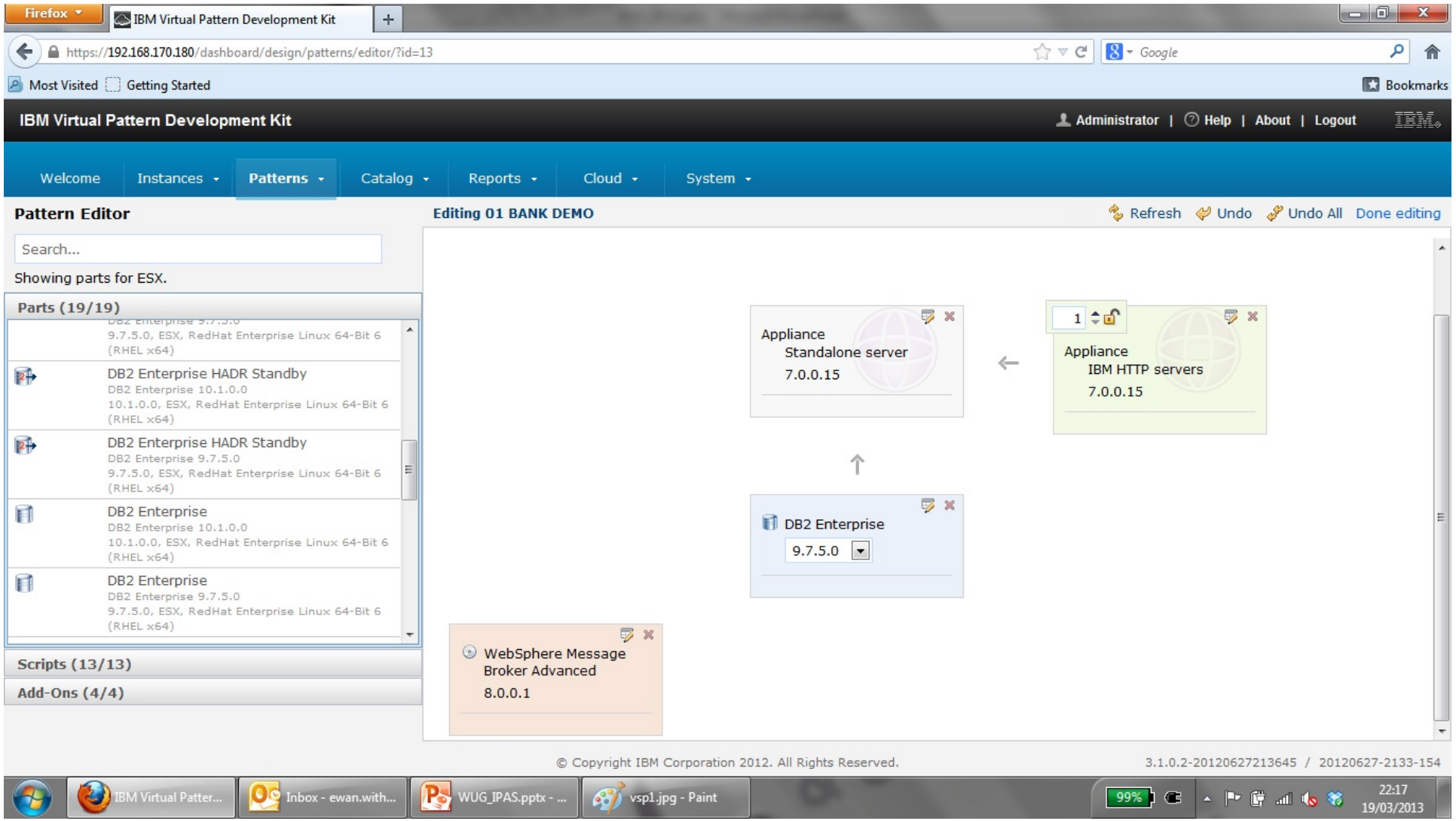
1. Script package



2. VSP creation



3. VSP nodes


Firefox
IBM Virtual Pattern Development Kit
https://192.168.170.180/dashboard/design/patterns/editor/?id=13
Most Visited
Getting Started
Bookmarks
IBM Virtual Pattern Development Kit
Administrator | Help | About | Logout
Welcome
Instances
Patterns
Catalog
Reports
Cloud
System
Pattern Editor
Search...
Showing parts for ESX.
Parts (19/19)
9.7.5.0, ESX, RedHat Enterprise Linux 64-Bit 6 (RHEL x64)
DB2 Enterprise HADR Standby
DB2 Enterprise 10.1.0.0
10.1.0.0, ESX, RedHat Enterprise Linux 64-Bit 6 (RHEL x64)
DB2 Enterprise HADR Standby
DB2 Enterprise 9.7.5.0
9.7.5.0, ESX, RedHat Enterprise Linux 64-Bit 6 (RHEL x64)
DB2 Enterprise
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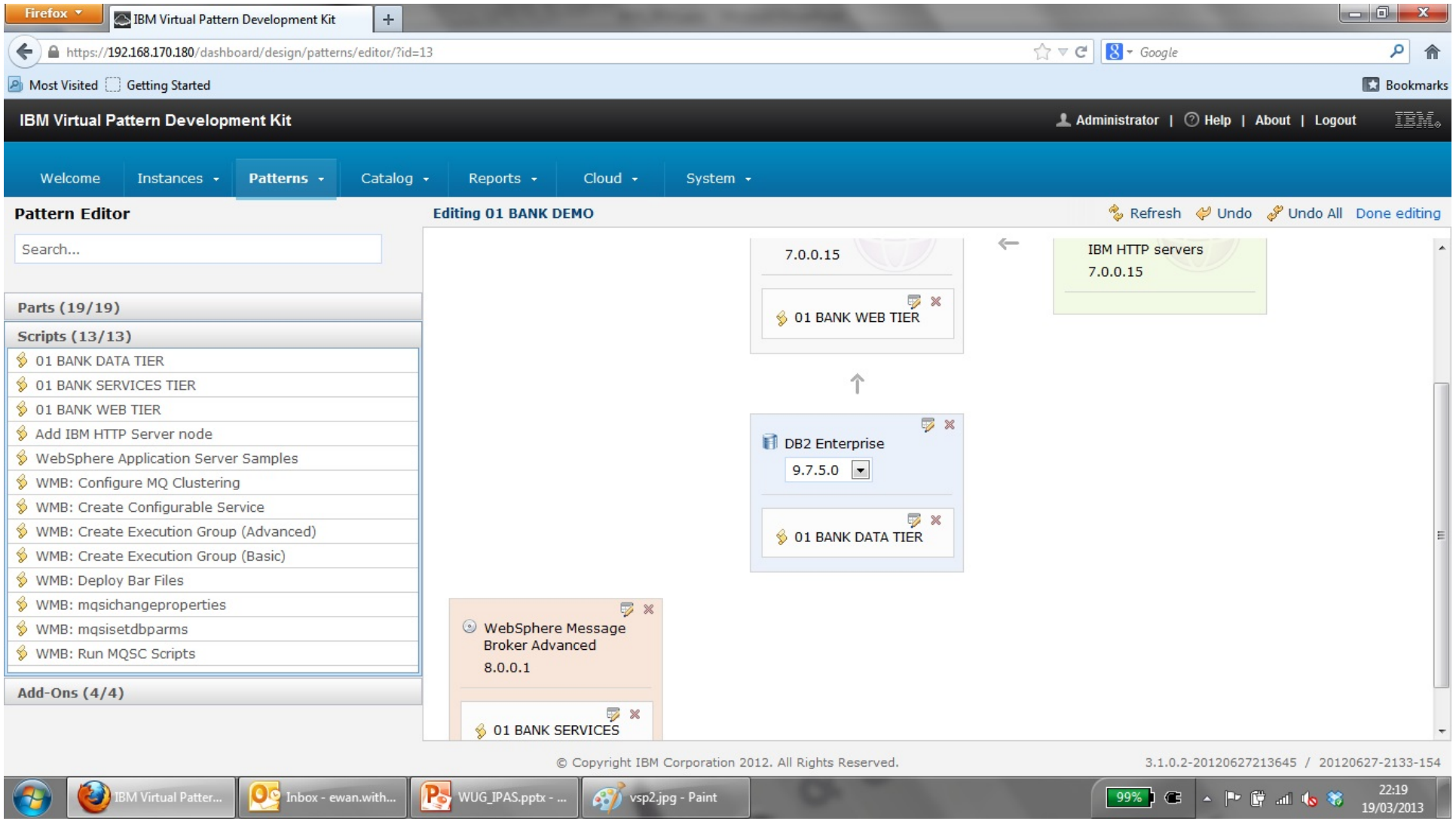
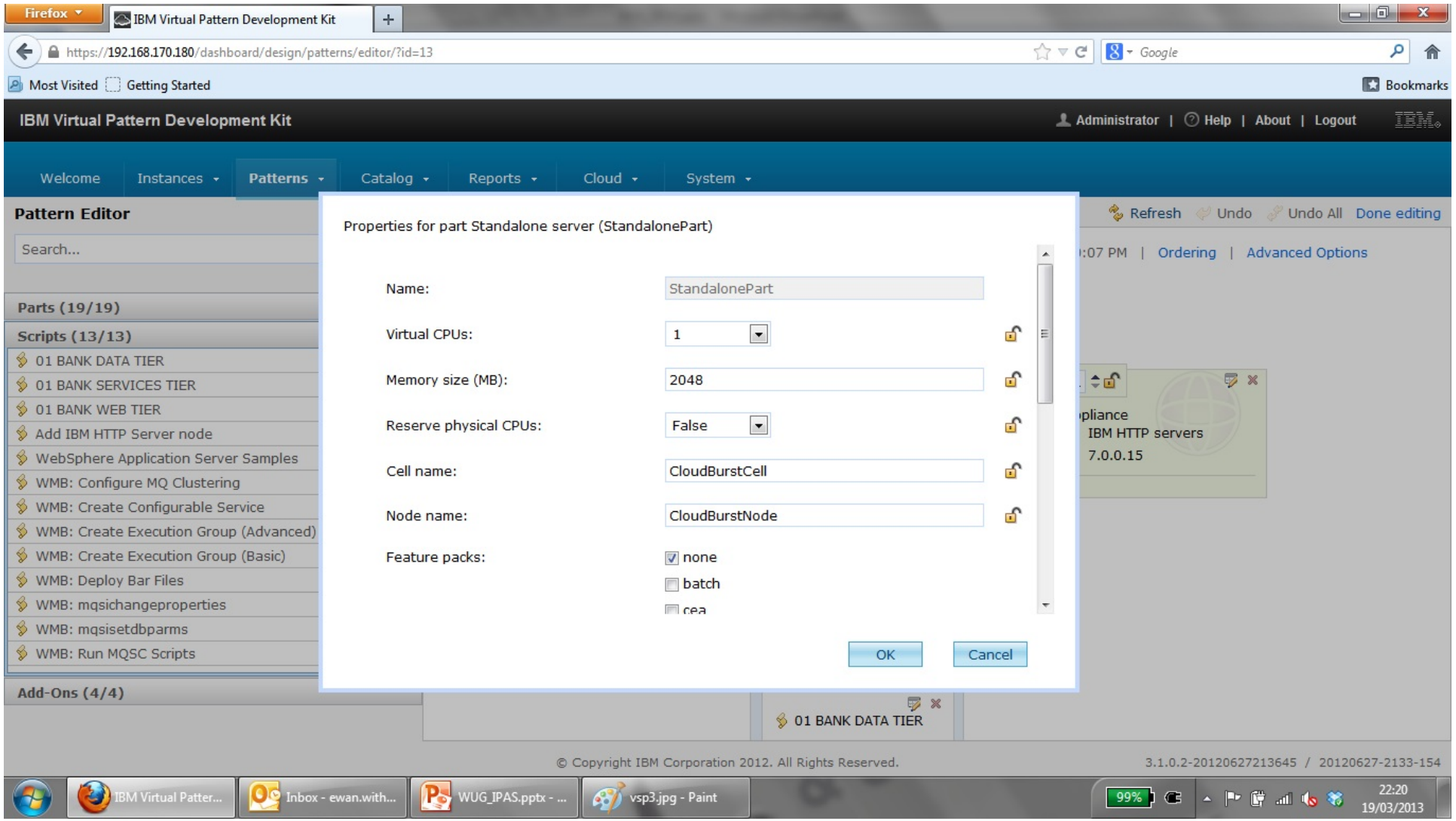
DB2 Enterprise
DB2 Enterprise 9.7.5.0
9.7.5.0, ESX, RedHat Enterprise Linux 64-Bit 6 (RHEL x64)
Scripts (13/13)
Add-Ons (4/4)
Editing 01 BANK DEMO
Refresh
Undo
Undo All
Done editing
Appliance
Standalone server
7.0.0.15
1
Appliance
IBM HTTP servers
7.0.0.15
DB2 Enterprise
9.7.5.0
WebSphere Message Broker Advanced
8.0.0.1
© Copyright IBM Corporation 2012. All Rights Reserved.
3.1.0.2-20120627213645 / 20120627-2133-154
IBM Virtual Patter...
Inbox - ewan.with...
WUG_IPAS.pptx - ...
vsp1.jpg - Paint
99%
22:17
19/03/2013

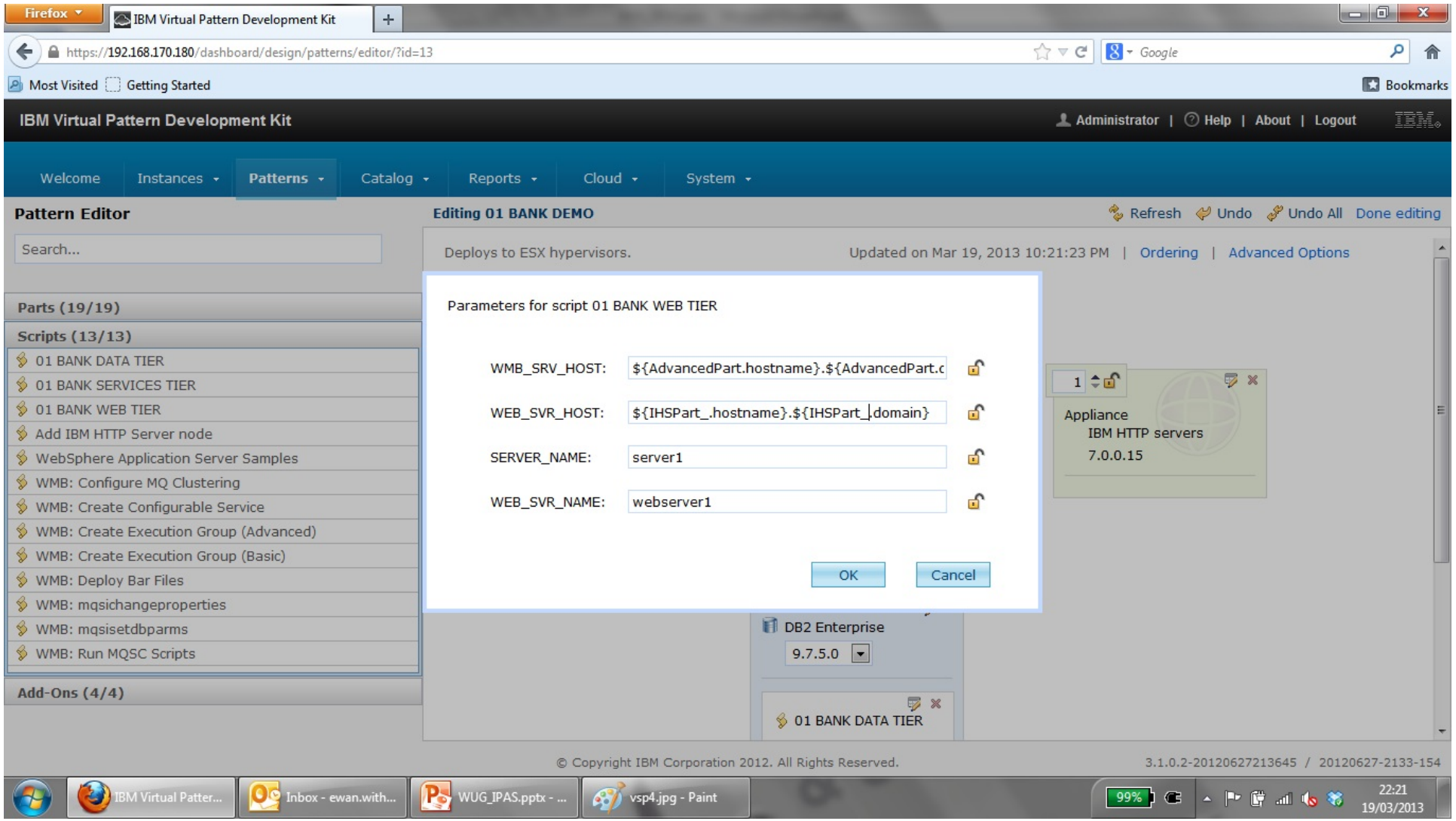
4. VSP scripts



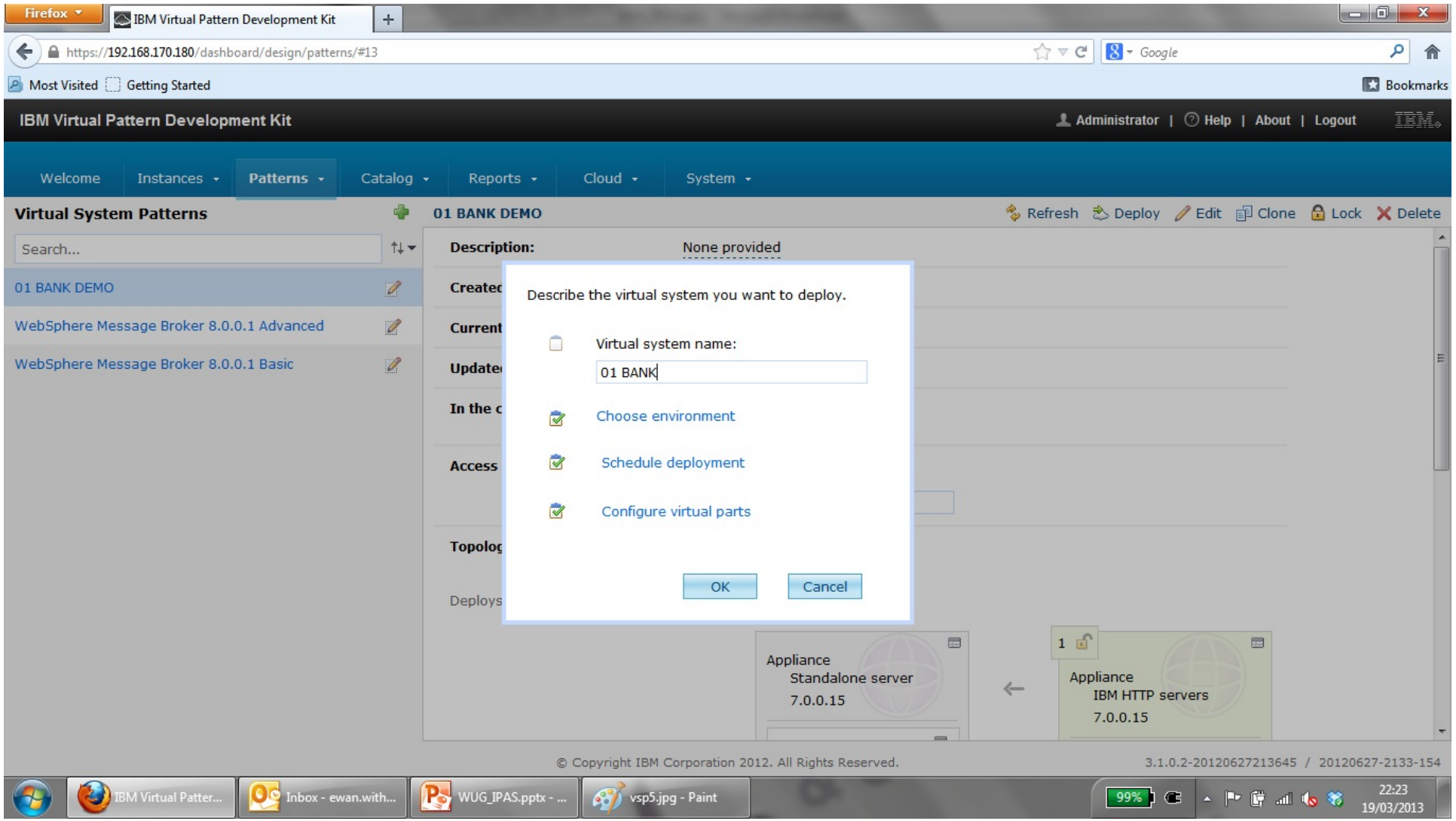
5. VSP node configuration



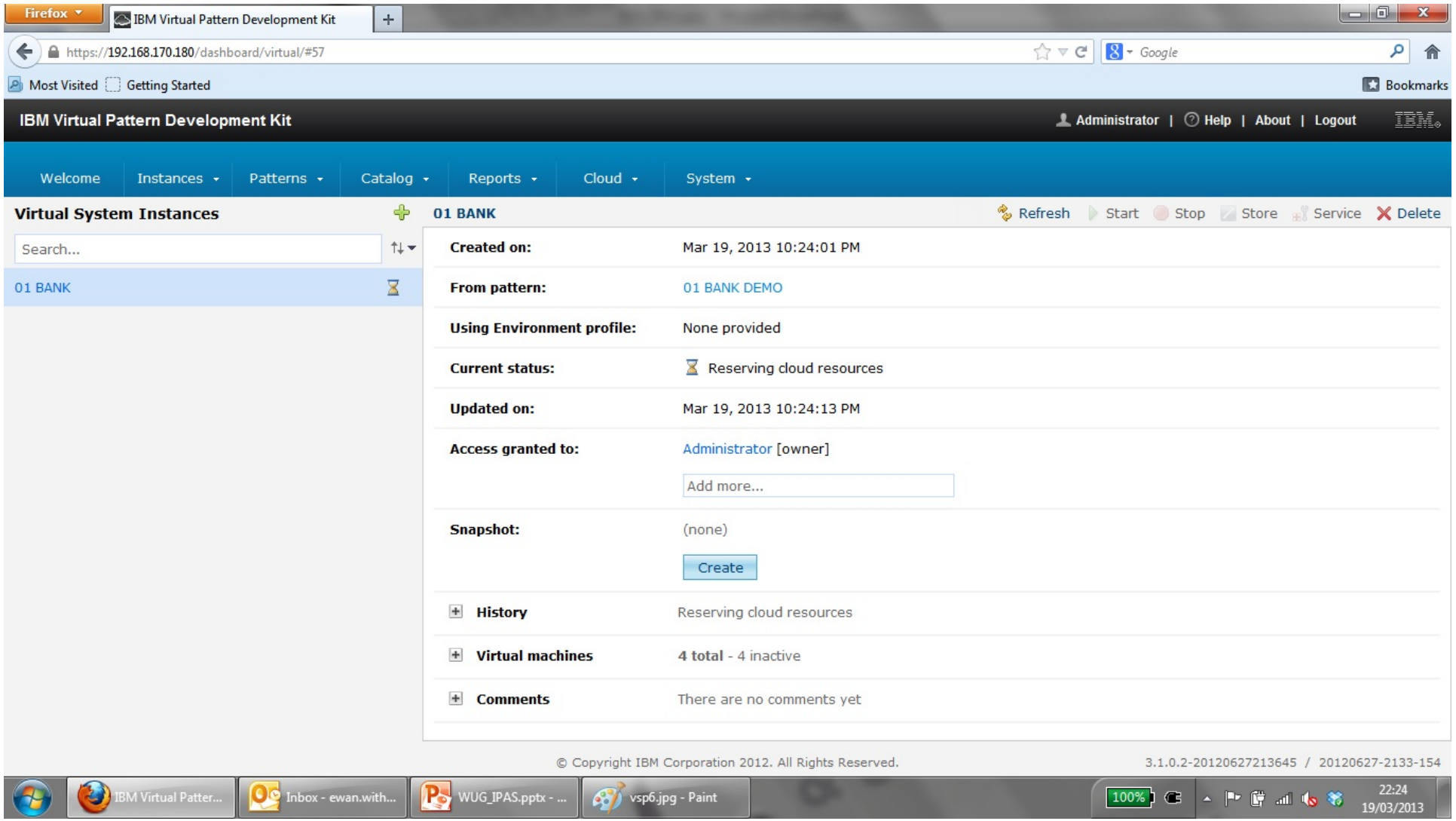
6. VSP script configuration



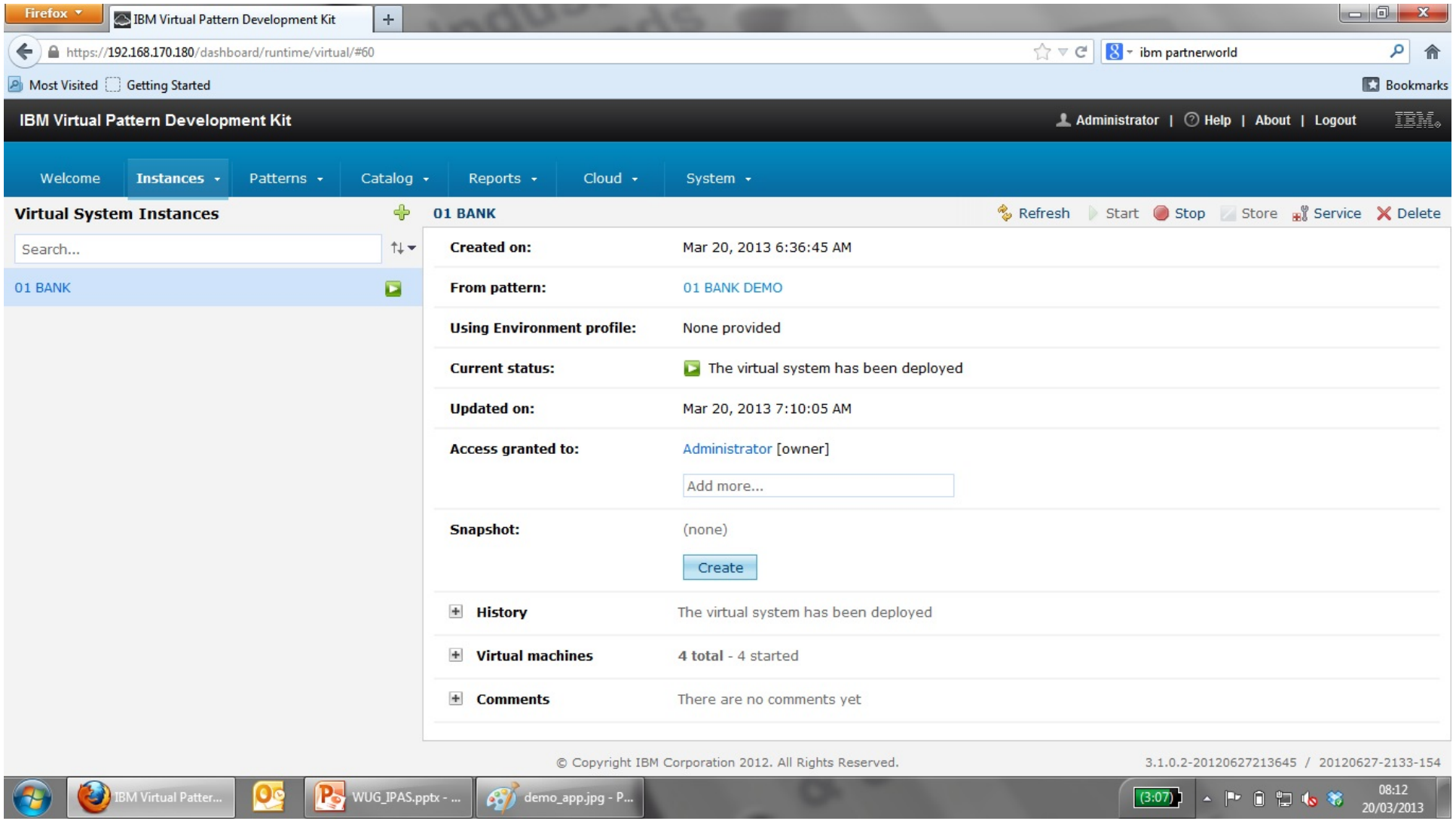
7. VSP deployment



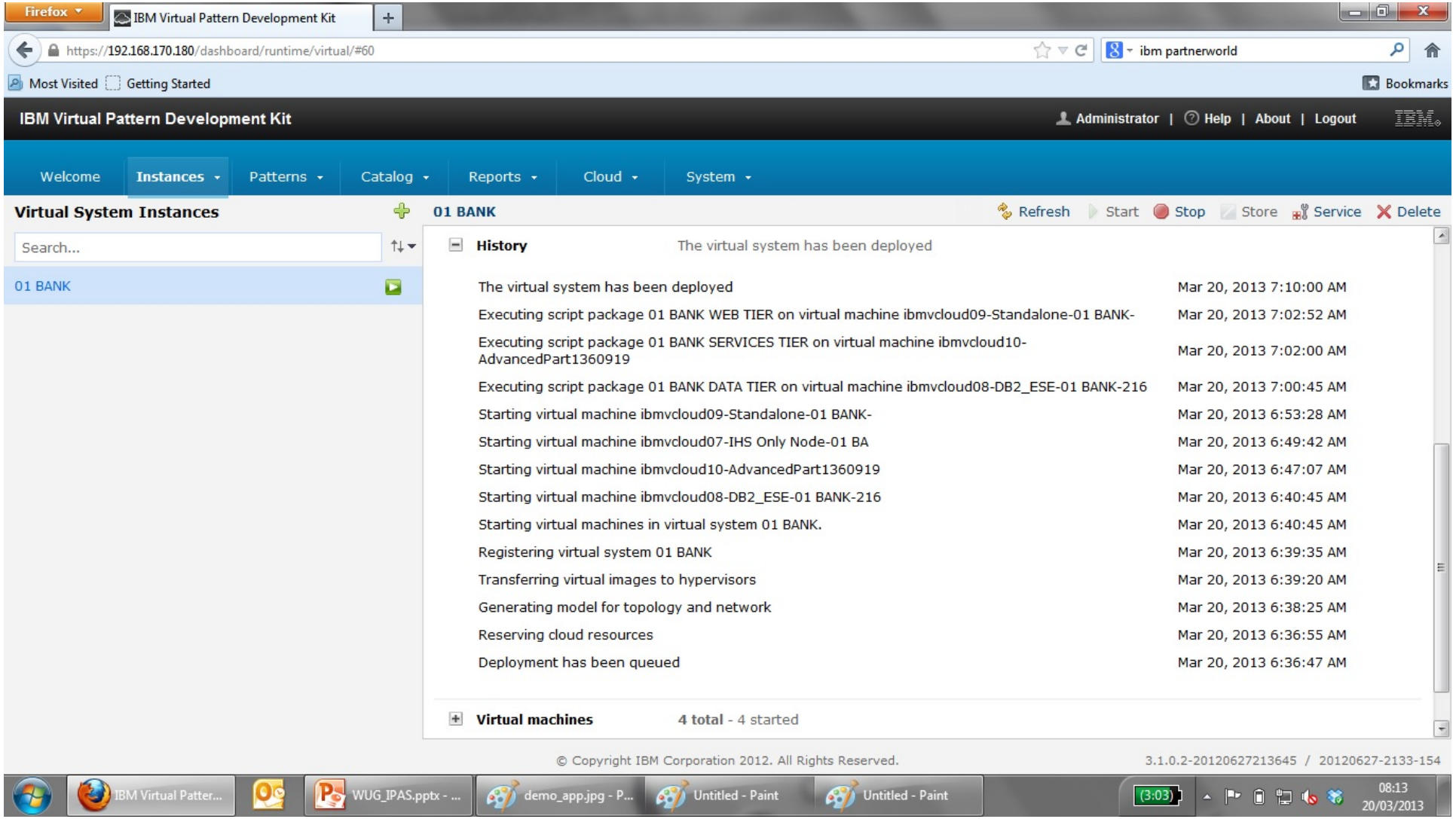
8. Deployment initialisation



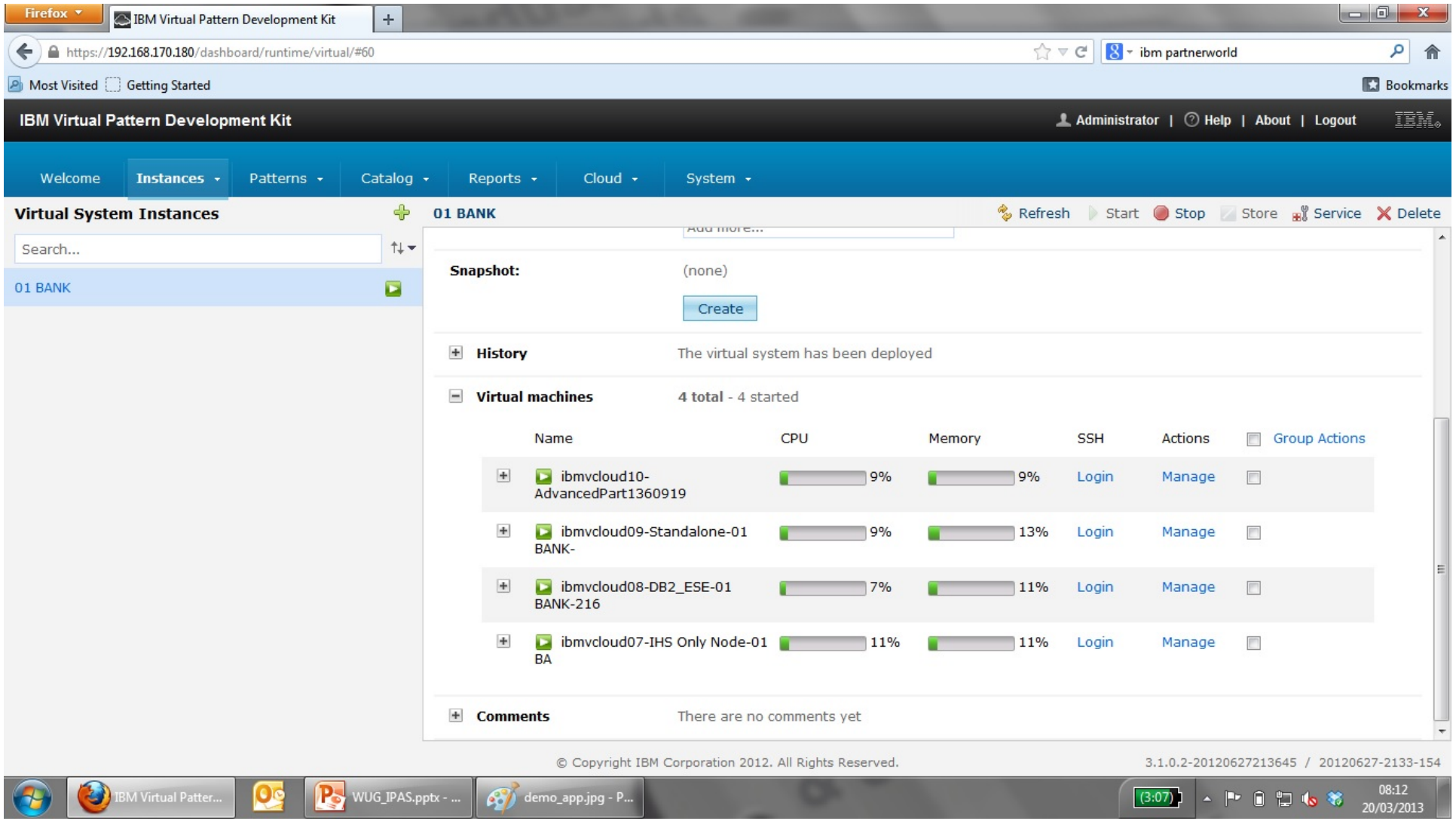
9. Deployment completion



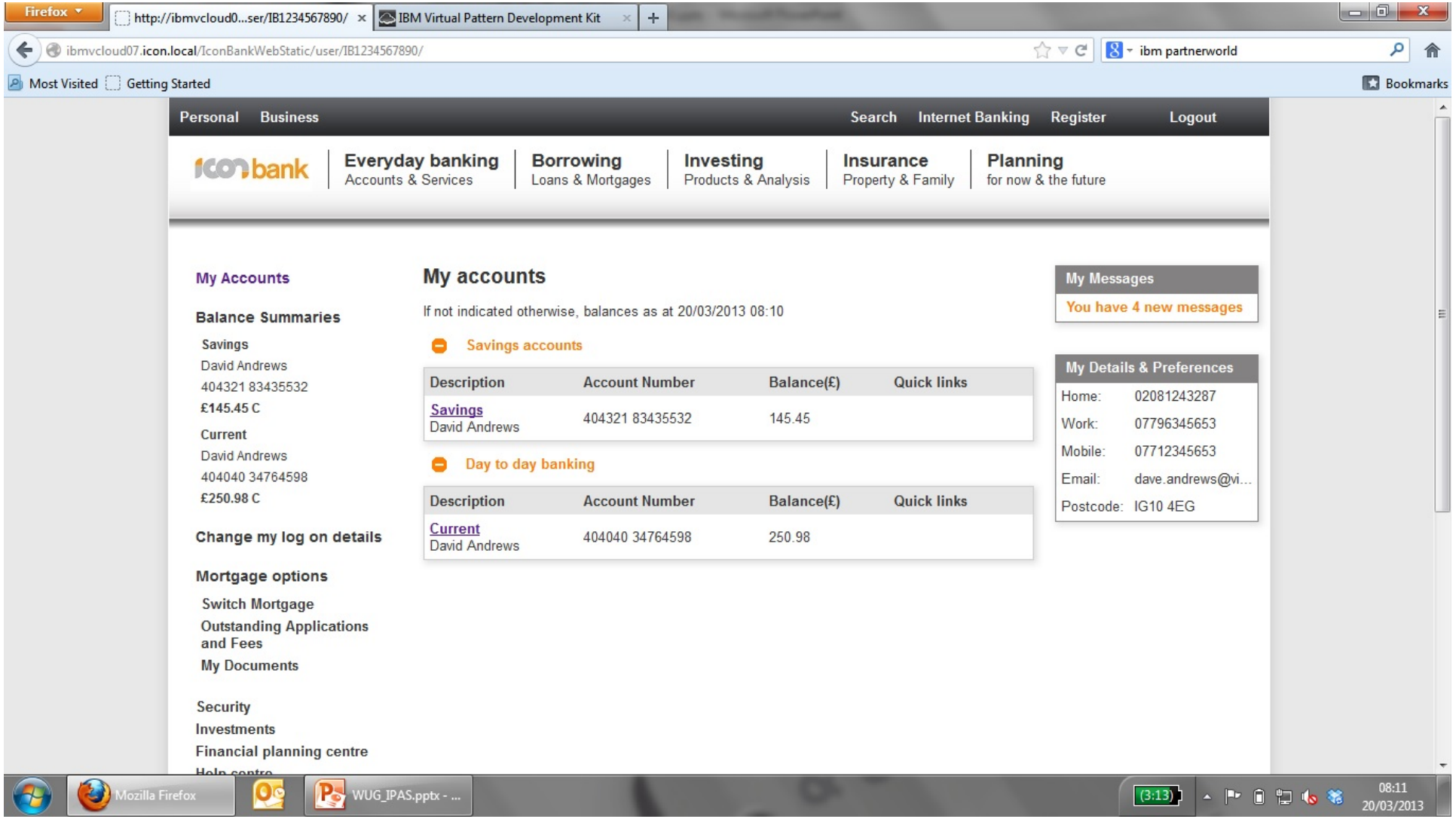
10. Deployment history



11. Deployed nodes



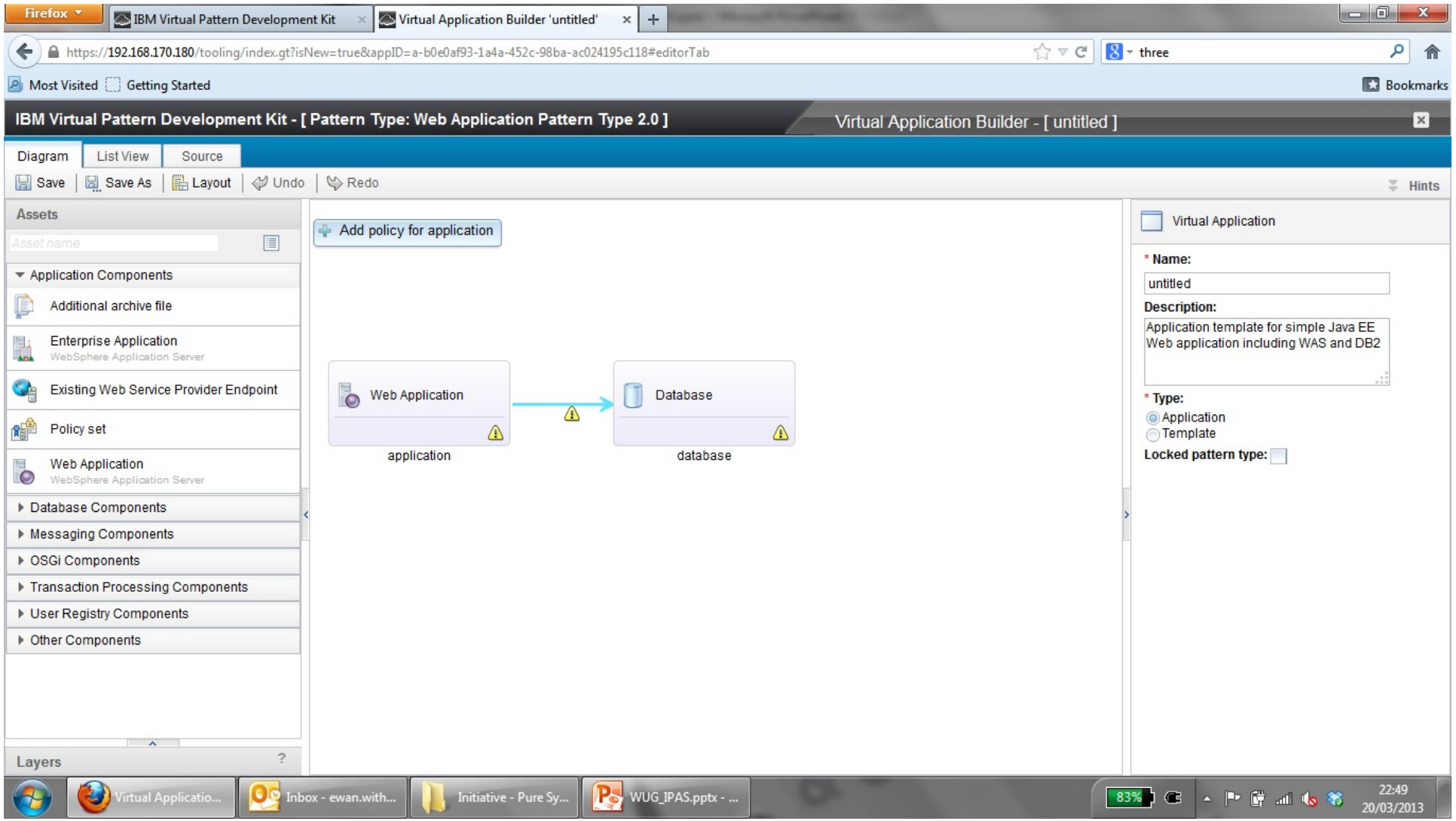
12. Running application



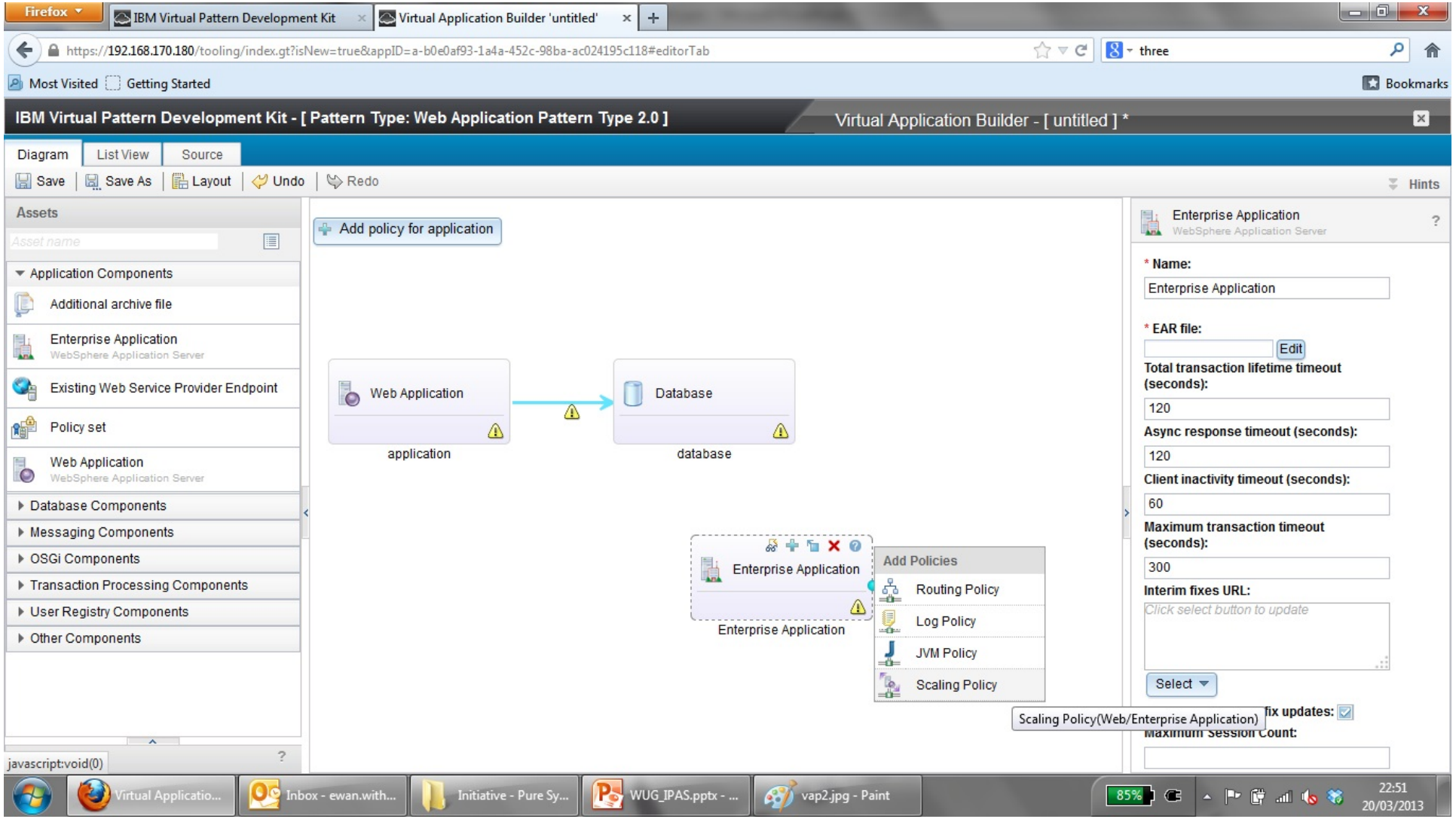
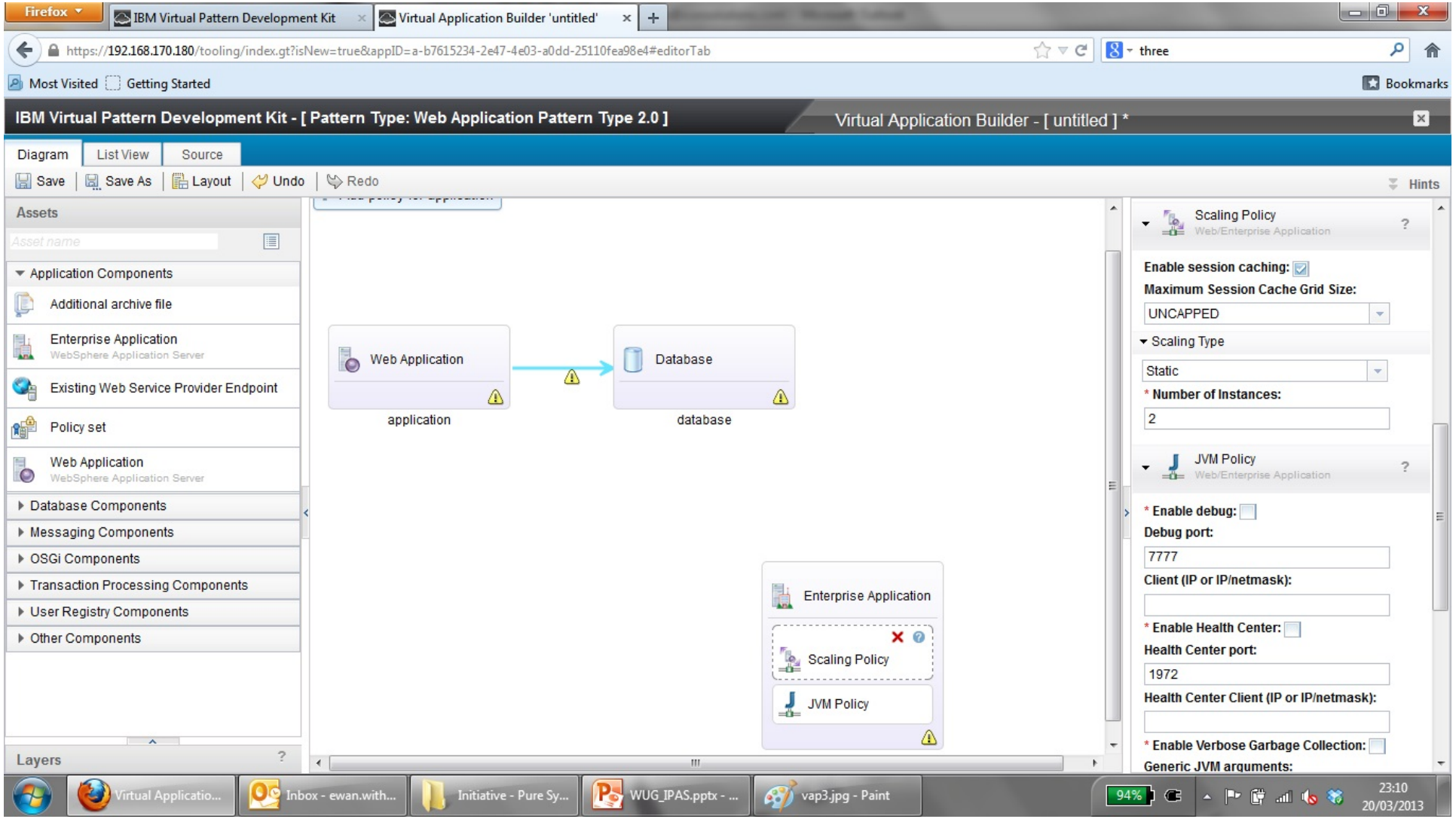
Appendix 2: VAP Screenshots

1. VAP creation
2. VAP policy addition
3. VAP policies

1. VAP creation



2. VAP policy addition



3. VAP policies