Paris, France

OSGi™ Alliance

2005 Developer Forum & World Congress

Paris, France

Apache Directory and the OSGi Service Platform

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About the Speaker

- 80's & early 90's VAX, Mac, and Unix network admin
- Mid-90's MCS for Unix-to-NT migrations
- Late-90's Director of Global Systems for Fortune 100, 6 continents, over 100 sites MS migrations
- Summer 2004 Apache Kerberos, granted to ASF
- Apache Directory, PMC Member
- Apache Change Password, NTP, DNS
- Safehaus founder (Mobile phone OTP token)
- OATH representative (HOTP)

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Windows 2003 Log On – Kerberos Protocol

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Windows Security

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Change Password Protocol

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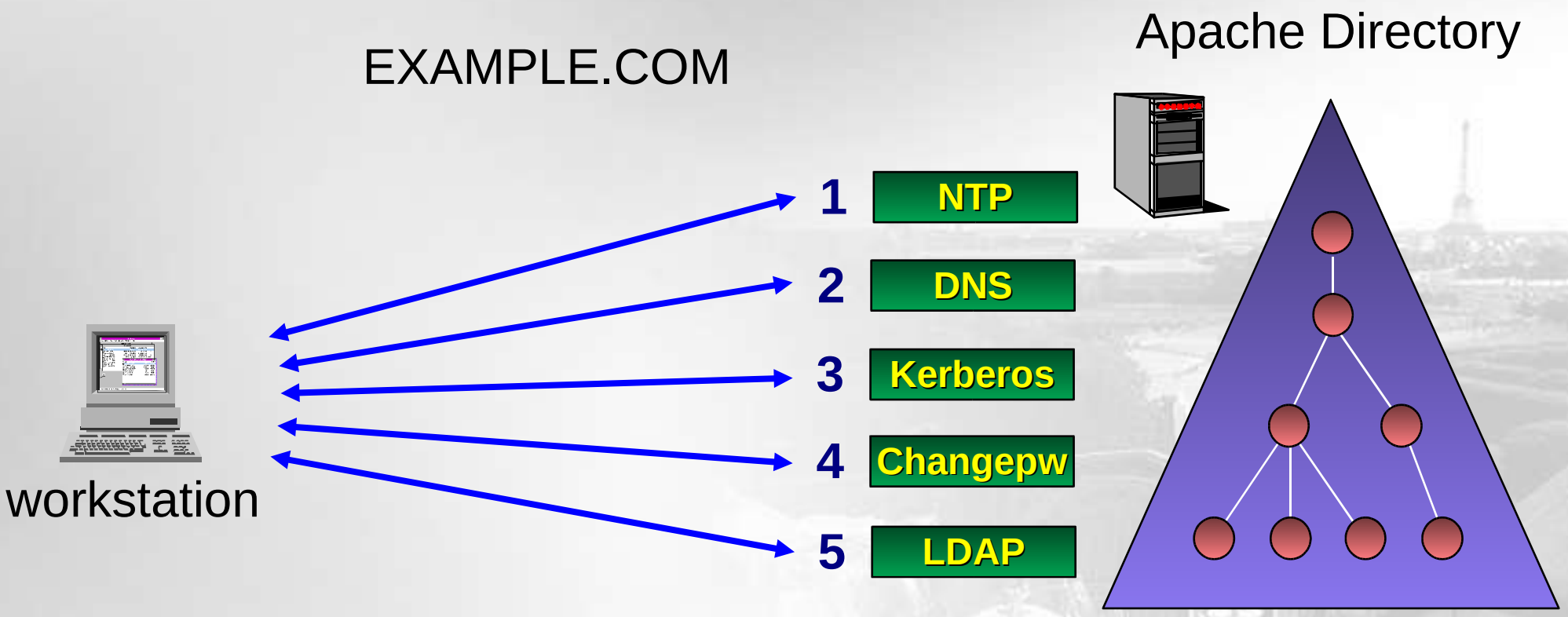
Realm Control



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Problem Statement

- Internal pressure (development environment)
  - Platforms: Linux, Mac, Windows ... and mobile phones
  - Complexity: RFC's, multi-master replication, ACI
  - Nature of open-source: time zones, work schedules
- External pressure (interested parties)
  - OSS community: permutations
  - Enterprise: robustness (long running services)
  - Fortune 9,000,000: ease-of-use
  - Vendors: extensibility (add-ons, embedding)

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Solution: OSGi Service Platform

- Development environment
  - Community involvement (Apache HTTPD mod_*)
  - Jetty Bundle, JMX Bundles, choice of implementation
  - Further out: mobile phones w/ Safehaus HausKeys
- Demands from community
  - LDAP Server or Kerberos Server or DNS Server
  - LDAP or JMX or Felix Console or Web UI
  - Embeddable Directory or Realm Controller
  - HOTP/SAM plugins for Kerberos

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Bundle Breakdown

- Apache Directory
  - Backing Store (JNDI InitialContextFactory)
  - NIO Networking Layer (MINA ServiceRegistry)
  - 5 Protocol Providers (ManagedServiceFactory, MBean)
- Administration
  - Embedded web UI (HttpService)
  - JMX (MBeanServer)
  - Felix Commands ('load /path/to/LDIF')
- ConfigurationAdmin, Service Binder

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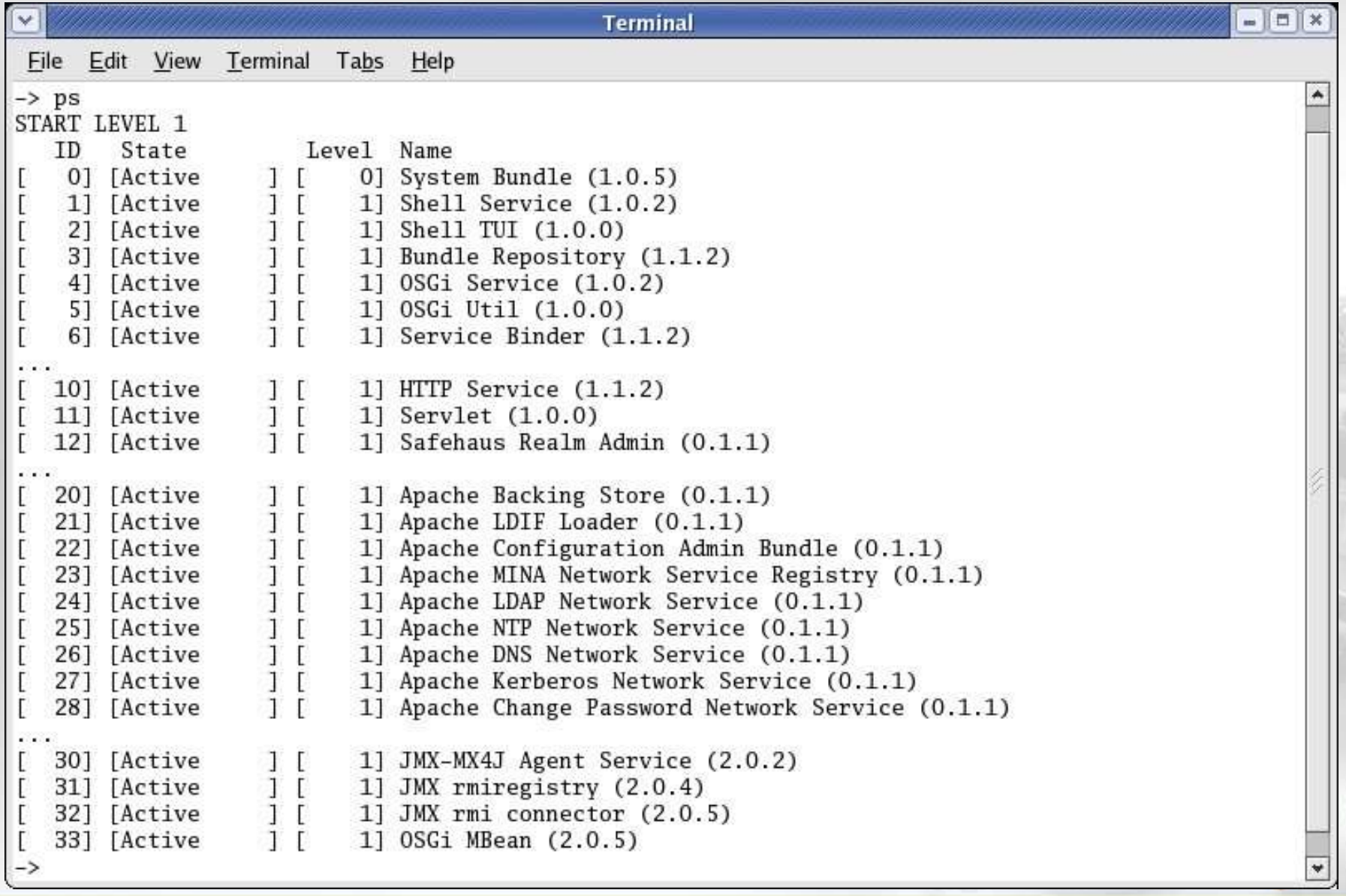
Apache Felix Installed Bundles



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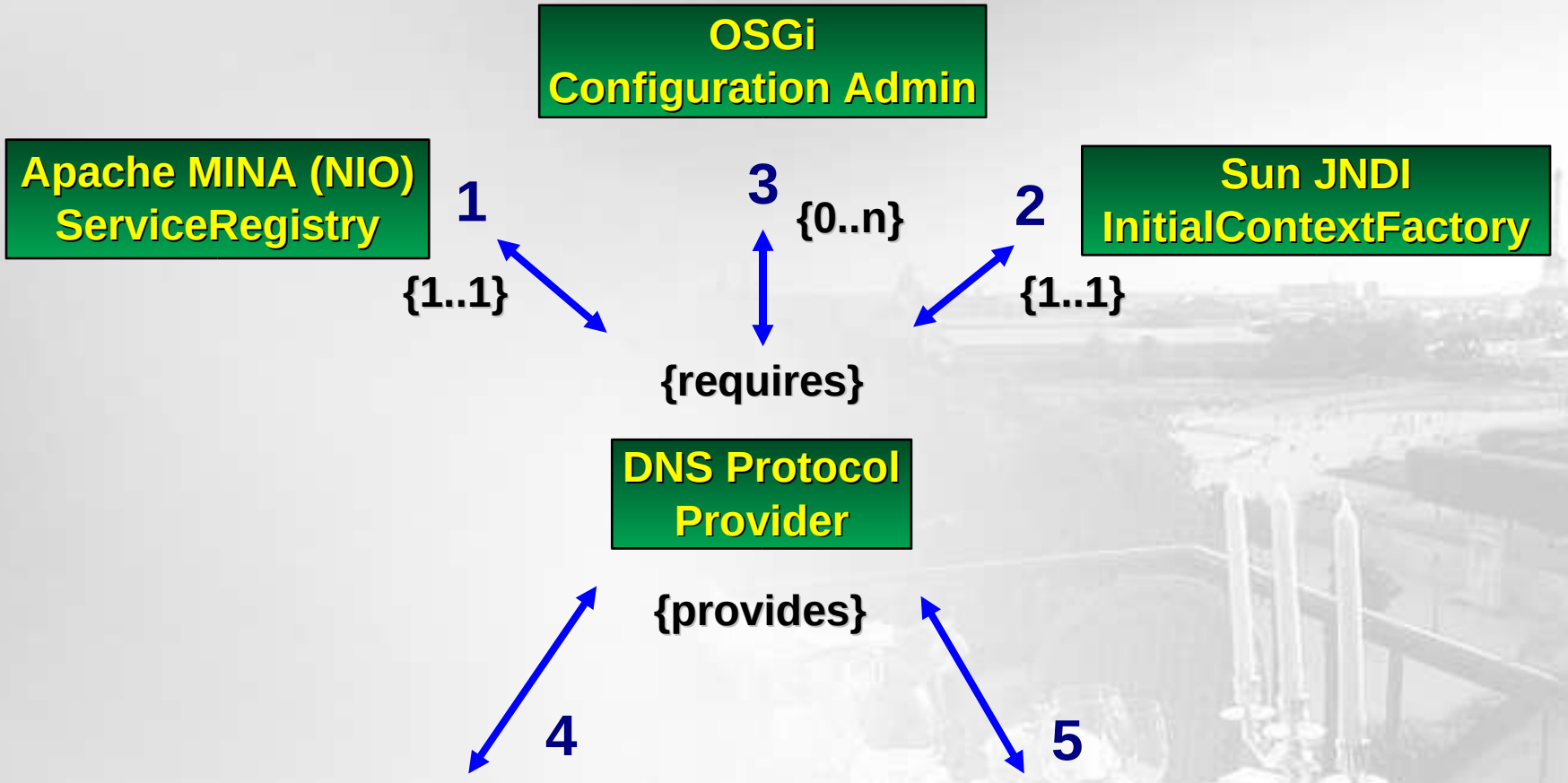
Dependency Resolution with Service Binder



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Service Binder Metadata

/root/osgi prezo/metadata.xml - gedit

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metadata.xml

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <!--<!DOCTYPE bundle SYSTEM "metadata.dtd">-->
3 <bundle>
4   <component class="org.apache.dns.DnsServerFactory">
5     <provides service="org.osgi.service.cm.ManagedServiceFactory"/>
6     <provides service="org.apache.dns.DnsServerFactoryMBean"/>
7     <property name="service.pid" value="org.apache.dns.factory" type="string"/>
8     <requires
9         service="org.apache.mina.registry.ServiceRegistry"
10        cardinality="1..1" policy="static" ...
11    />
12    <requires
13        service="javax.naming.spi.InitialContextFactory"
14        cardinality="1..1" policy="static" ...
15    />
16    <requires
17        service="org.osgi.service.cm.ConfigurationAdmin"
18        cardinality="0..n" policy="dynamic" ...
19    />
20  </component>
21 </bundle>
```

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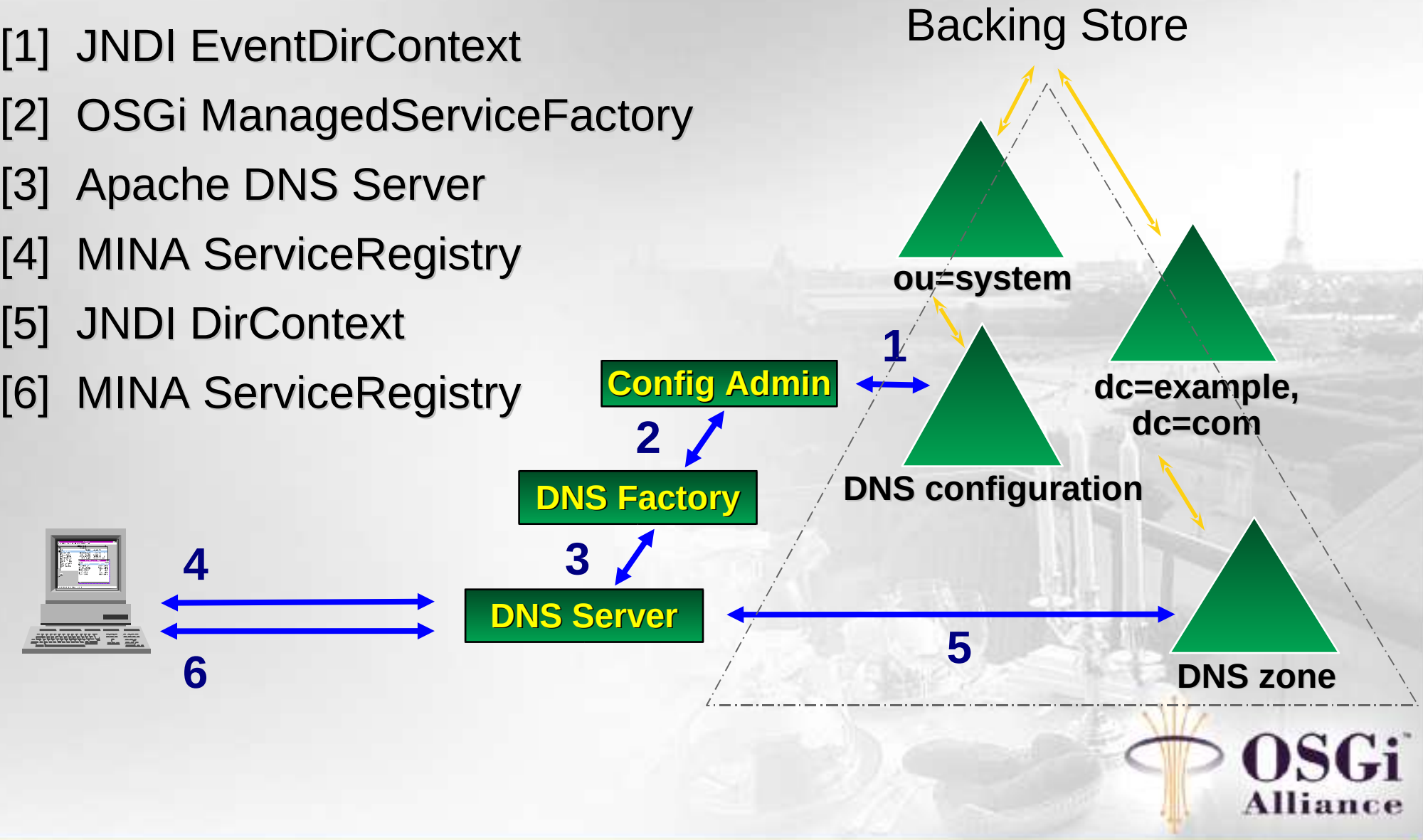
Configuration and Serving

- [1] JNDI EventDirContext
- [2] OSGi ManagedServiceFactory
- [3] Apache DNS Server
- [4] MINA ServiceRegistry
- [5] JNDI DirContext
- [6] MINA ServiceRegistry



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DNS Configuration

- IP port
  - 10053 --> 53
- “Active” partitions
  - example.com --> apache.org
- Server instance
  - service.pid: org.apache.dns.1
    - IP address: 192.168.0.1, port: 53
    - search base: dc=example,dc=com
  - service.pid: org.apache.dns.2
    - IP address: 10.0.0.1, port: 53
    - search base: dc=apache,dc=org

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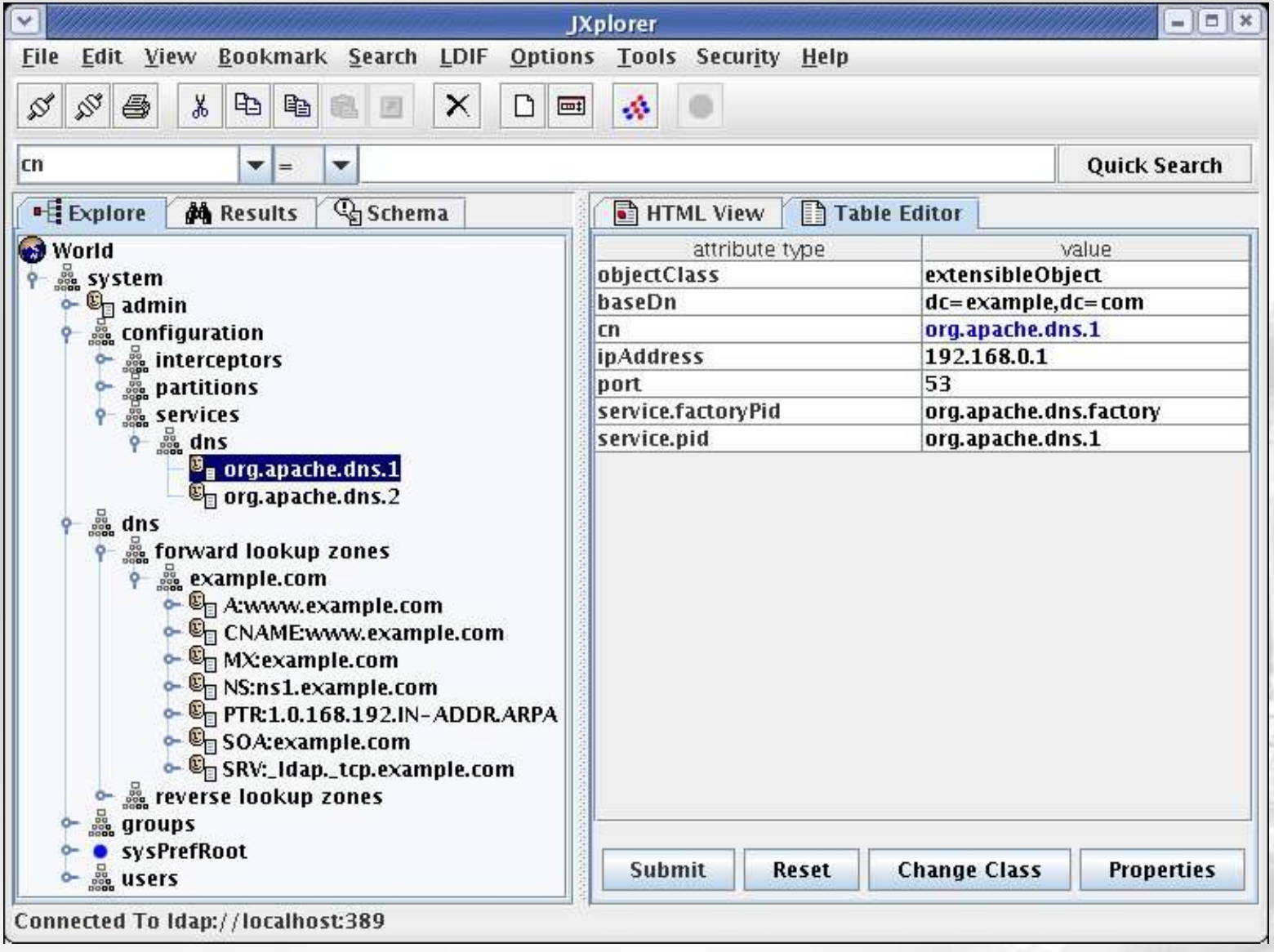
Configuration Admin with LDAP and DNS



What's Next?

- Apache Directory
  - 1.0 Release by March 2006
  - Finer-granularity (core interceptors, Kerberos SAM)
- Apache Felix
  - Configuration Admin (separate store, R4 update)
  - Prefs Admin, User Admin (typical LDAP data)
- Apache
  - Critical mass of bundles
  - OBR/Update site
  - Cocoon, JAMES?, Geronimo?

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Thank you!

- ApacheCon US 2005 (December, San Diego, CA)
  - In-depth “realm control” with Apache Directory
- Apache Directory Project
  - http://directory.apache.org
- Apache Felix Project
  - http://incubator.apache.org/projects/felix.html
- Safehaus HausKeys, Mitosis, TripleSec
  - http://hauskeys.safehaus.org/
  - http://mitosis.safehaus.org/
  - http://triplesec.safehaus.org/

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