

Adaptive Real-time Infrastructure for a complete OMG Model Driven Architecture™



Kabira develops Adaptive Real-time Infrastructure software based on the Model Driven Architecture for the creation and deployment of complex, high-speed, transactional, high-availability network-based services and software using the OMG Model Driven Architecture™.

Telecom Services:

- web & wireless self provisioning
- bandwidth-on-demand
- xDR mediation for voice + data svcs
- instant on wireless & m-commerce
- location based svcs
- voice over IP and packet services
- SLA, LNP and pre-paid management

Distributed Hosting:

- hosting & data center session mgmt
- edge and border caching & mgmt
- network state & event caching
- NMS, EMS and event aggregation
- network based process & work flow
- in-memory transactions & roll back
- burst management



A new class of problem in networks

Burst / Variable Capacity Networks

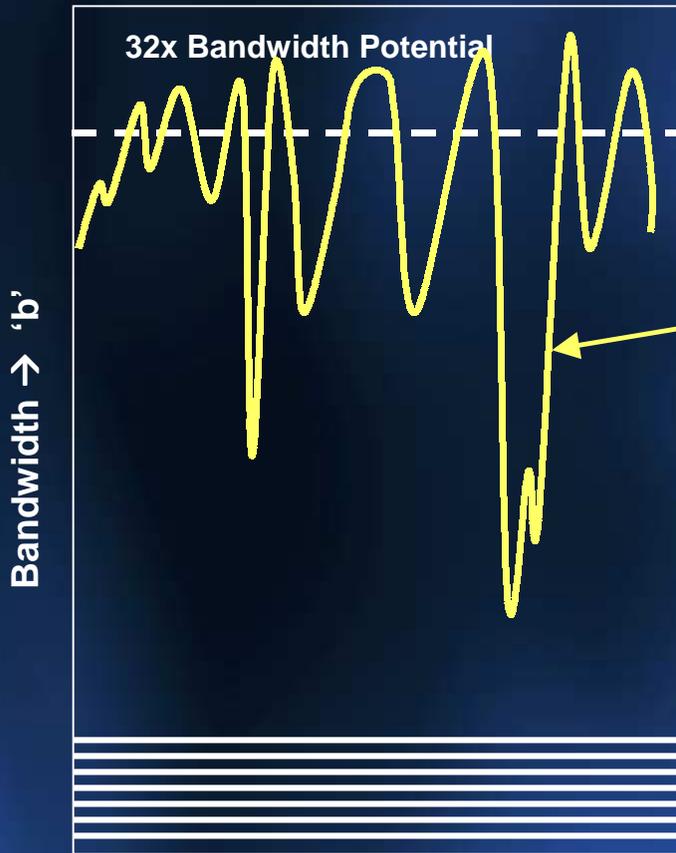
- Software activated services
- Web based and IVR front ends
- Packet Switched Hardware
- System is never offline
- Services and SLAs defined in Software

New Class of Problem for Software

- *Huge bursts of activity and traffic*
- *Bit rate data mediation & billing*
- *Managing asynchronous events*
- *Continuous operations*
- *Complex Services might require years to design & develop*

Assured / Fixed Capacity Networks

- Technicians activate services
- CSRs on voice calls
- Circuit Switched Hardware
- Service capacity is 'fixed'
- Offline upgrade



Time → 't'





Kabira's software is deployed to solve some of the toughest network software problems in the world.

A New Class of Problem

- Services that require software
 - Shortage of developers
- Runtime requirements
 - Fault recovery
 - Change tolerance
 - High speed transactions
 - Scaling up to Web or IVR
- Complex Services that require years to design & develop using traditional methods
- Complex system connections

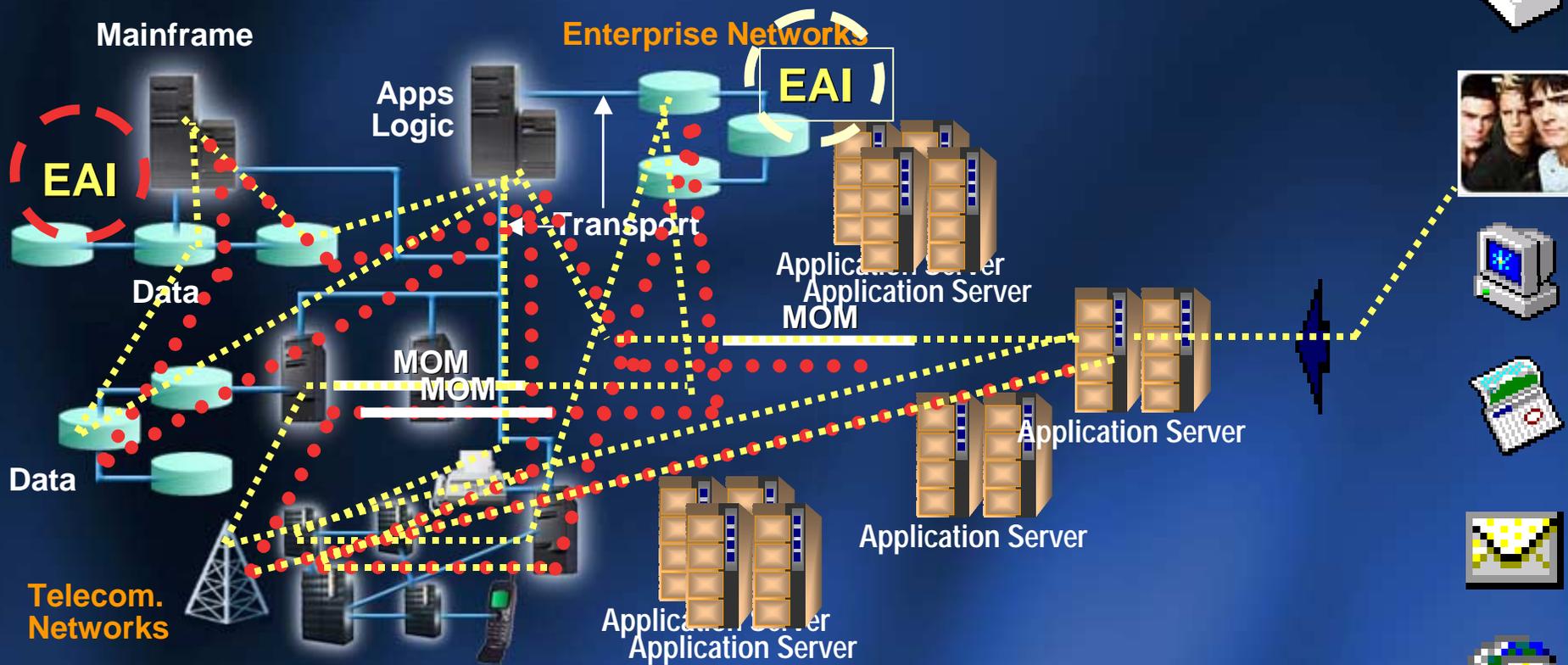
Kabira Provides

- • Model driven architectures
 - Building software from models
- • Kabira Server: *Adaptive Real-time Infrastructure*
 - Caching & aggregation
 - Failover recovery
 - Online upgrades
 - Handling huge bursts
- • Pre-built Commercial Solution Frameworks
 - Provisioning & Activation
 - xDR, CDR, IPDR Mediation
 - ASAN & High-Availability
- • Adapter Factory
 - NAI / EAI





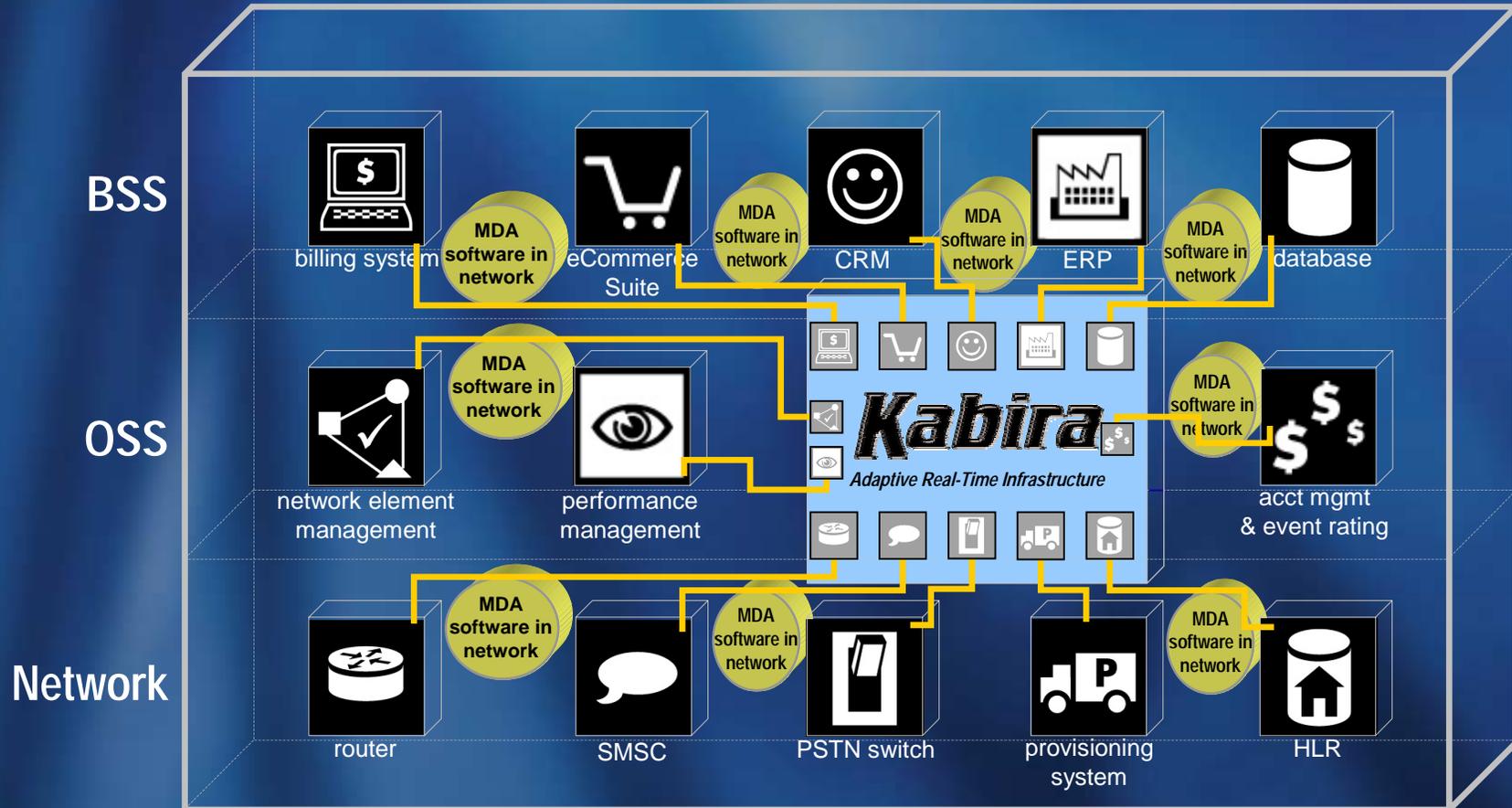
Network Evolution Has Resulted in Congestion, Slow, Unreliable Services and Chaos



Application Servers	Single Function
EAI	Pre-canned Glue
Middleware	Fast Pipe
Development	Last Generation

Chaos Driven Network Services
'a thousand points of failure'

Smart OSS: Integration of Network Elements & Applications for all 3 Control Layers



1. Kabira Adapter Factory Automates Adapters for CORBA, Java, XML

2. Caching provides access to data 5 to 10 thousand times faster than disks & networks

3. New apps are created directly from UML models; 100% constructed by design center



Service Engines from Models

100% Code Generated – 100% Standards Based



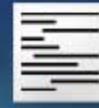
UML



Activity Diag.



XML



Java



CORBA

Third-Party
Tools

Design Center

Next
Generation
Service

ObjectSwitch Server

Process
Automation

Data
Automation

Package Mediation

Network Mediation

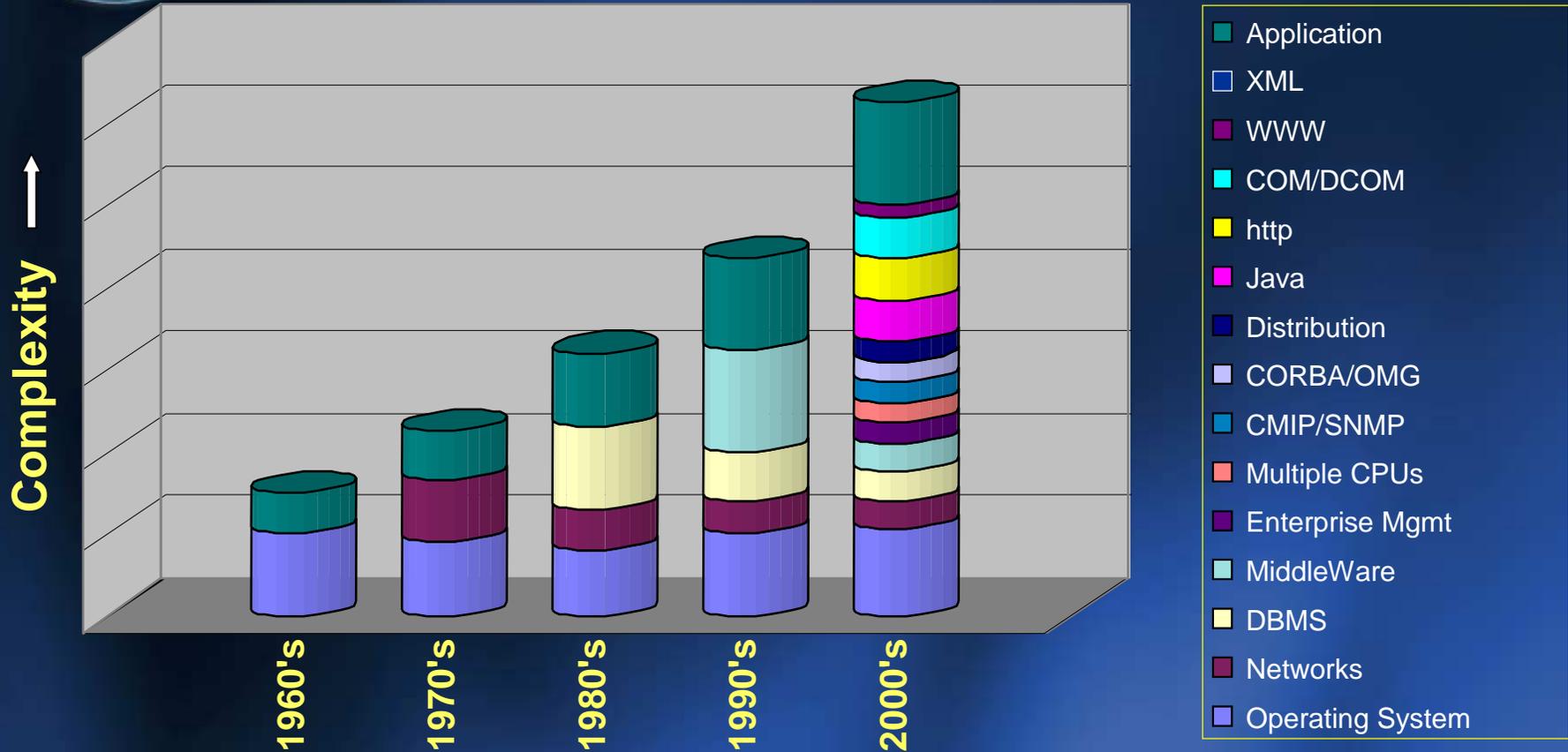
Service Engines
are 100% Auto-
Generated
Directly from
UML and Action
Specifications

Directly from
Rational ROSE®
to Running
Kabira Cached
Applications





Complexity Challenge and APIs



Yesterday's solution - API proliferation - is today's mess.





From API Centricism to MODELS

APIs

- Technology specific
- Encourage hand-coding
- Assume state awareness
- Difficult to “Upgrade”
- Focused on implementation, not desired results
- *Yesterday’s “Register Aware” applications are today’s “API Aware” applications*

Models

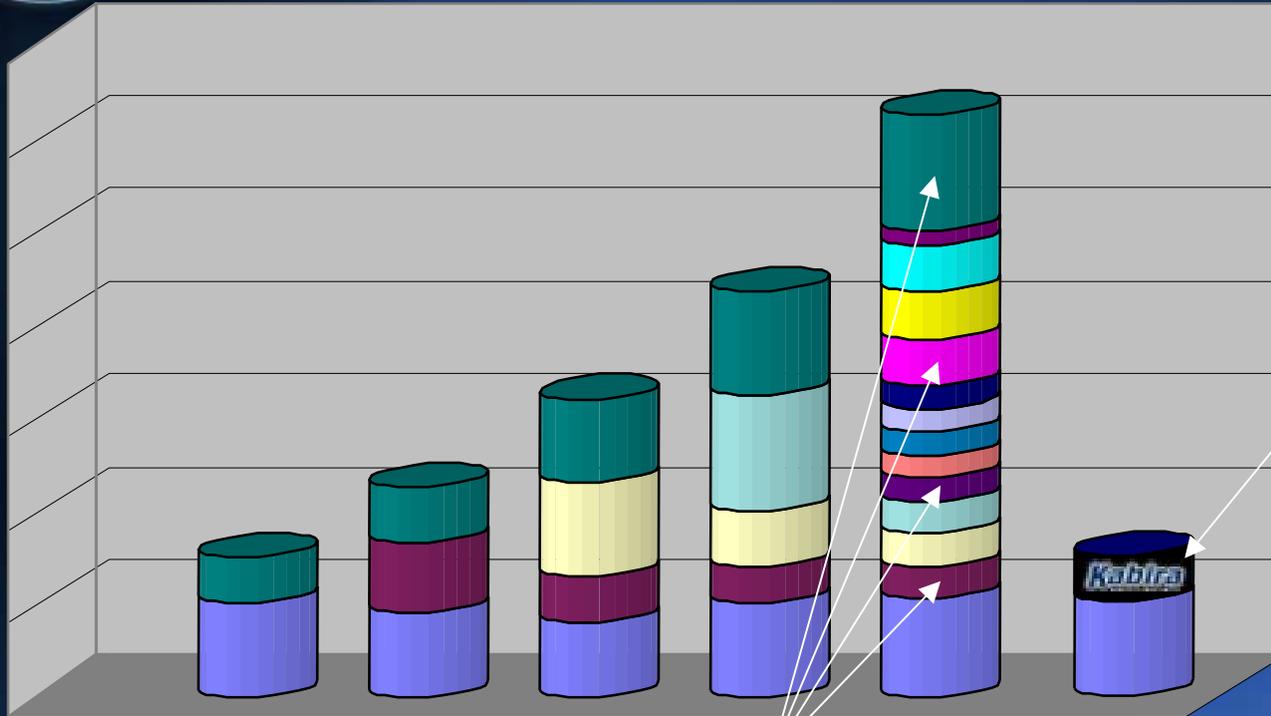
- Technology Independent
- New ability to Completely Define needed solutions without hand-coding
- Simple to Upgrade
- Focused on “What” not “How”
- *The new, most valuable form of software intellectual property!*





Model Driven Architectures Reduce Complexity

↑
Complexity



1960's

1970's

1980's

Today

APIs

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- Encourage hand-coding
- Assume state awareness
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- Focused on implementation, not desired results
- *Yesterday's "Register Aware" applications are today's "API Aware" applications*

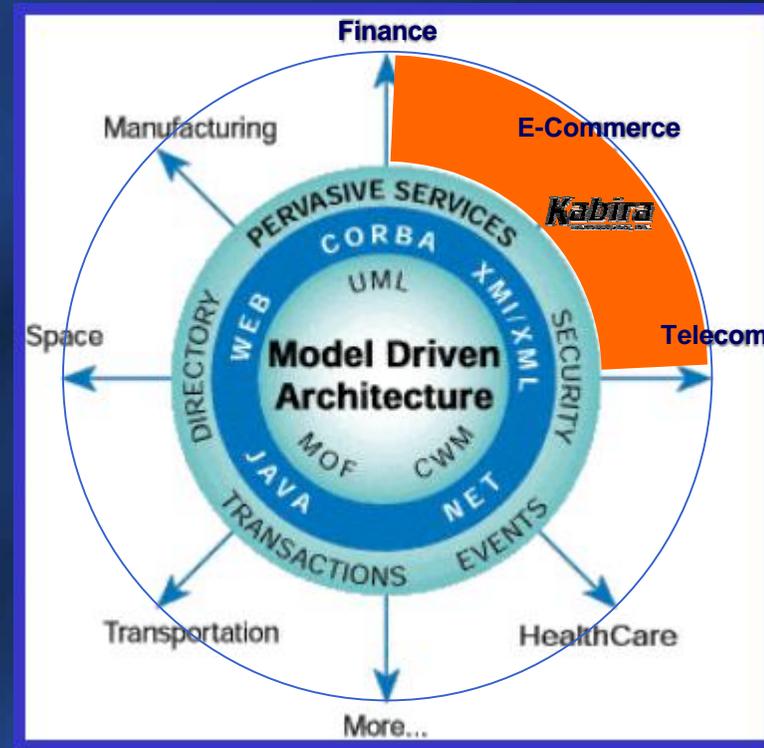
Models

- Technology Independent
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OMG MDA™ – An Über Specification

- Starts with UML™
- Builds on:
 - CORBA® & IDL
 - JAVA
 - XMI/XML
 - HTTP
 - .NET
- With Support for
 - MOF - the meta object facility and
 - CWM - common warehouse meta-model





Rational / Kabira Alliance Overview

- Kabira has become a **Rational Global Alliance Partner** for *Model Driven Architecture* Solutions in Telecom & e-Business
- The two companies are now actively working together to enable new solutions for customers based upon the *entire Rational product family* and the *Kabira adaptive real-time infrastructure* platform...*from models to executables!*
- Kabira provides the *proven 'engine'* underneath Rational tools for high-performance, burst traffic scalability, in-memory transactions, online upgrades and fail-over recovery.

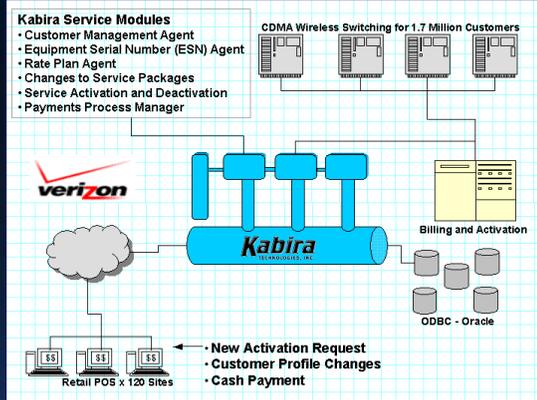




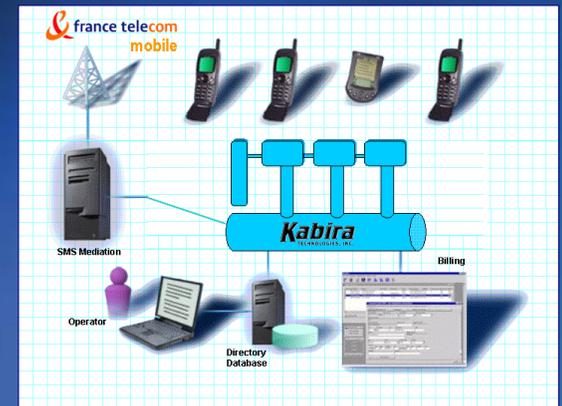
Kabira MDA Case Studies: Wireless 2.5 G



- Migration from AMPS to CDMA
- LHS, CORBA, Oracle (ODBC), CMDA to Switching, Retail POS Interface
- 1.7 Million Subscribers
- Reduction of activation from 3 days to 90 minutes
- 1600 Hours Per day in Labor Reduction



- Short Message based Directory Service
Mobile user contacts '712' Directory Service
Name & Number information is sent to Phone via SMS
All message management is fully transactional
- Full Deployed Design & Development in 9 Weeks from UML Models and OMG MDA
- World's first SMS push based directory service implementation
- Supports:
More than 12 million subs and 6,000 operators on 6 servers

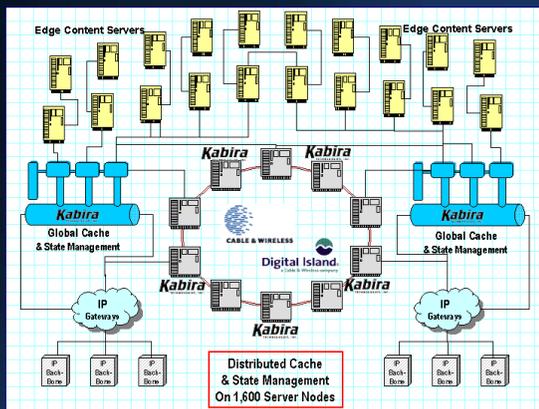




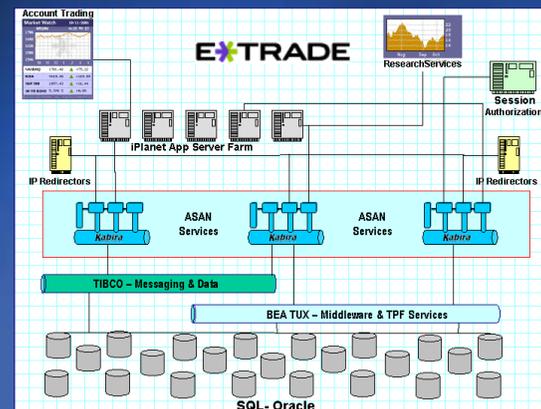
Case Studies: Massive Distributed Hosting



- Invalidation service selected as first project – removes out-of-date cached web content from all servers
- Highly distributed environment: 1500 servers today, 6000 world-wide tomorrow
- Node level performance at 7,500 transactional cache events per second
- Massively distributed architecture



- Massive Volumes, Complex Environment, Hundreds of Web Servers
- Requiring
 - Fault Tolerant Application Data Availability
 - Cross-Site Functionality without Lock Delays
- Used UML and the MDA to develop an Application Storage Area Network - ASAN
- Application data in Cache
- 2x increase in number of active Users
- Reduce DBMS by 75%

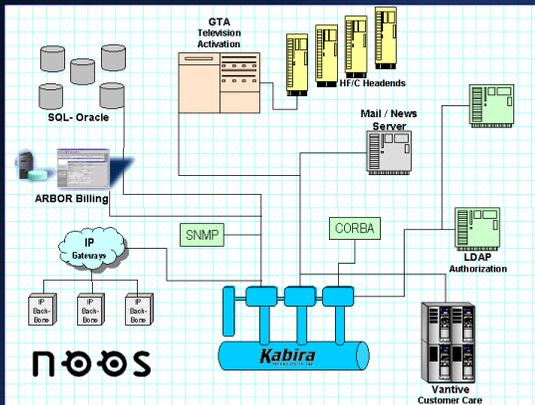




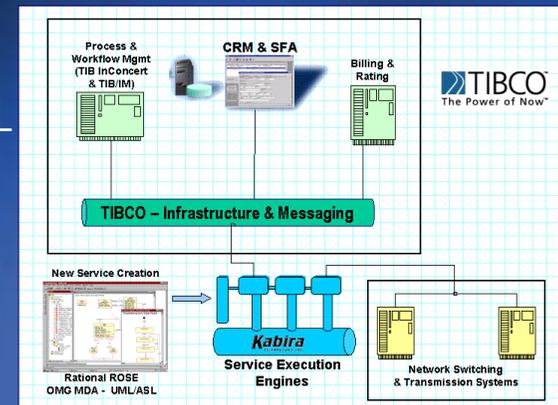
Kabira MDA Case Studies: Cable & MSO



- Services-on-Demand for Cable, Telco, ISP, MSO provider in Western Europe
- Persistent store to SQL database
- Layered IP services support
- Complex, packet-based IP billing mediation and customer event mediation – distributed to Arbor Billing
- OMG MDA application is first MDA based cable solution in the world built 100% from UML & ASL



- Service Engines on TIB/Rendezvous
- Kabira supports new network services
- TIB supports massive publish / subscribe access to enterprise
- SLAs & QoS for Telecom, Packet services & high-order (layered) data services over heterogeneous networks at high-speed
- New services built 100% from UML/ASL
- Drag and drop Kabira service engines onto the TIB bus





Deployed OMG MDA™ Based Solutions in 16 Countries





Kabira's Partners



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www.kabira.com

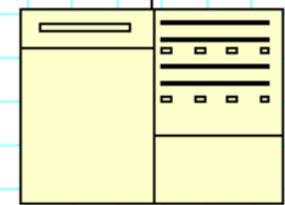
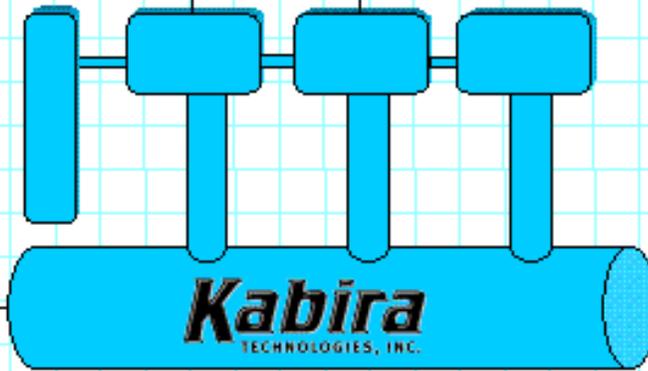
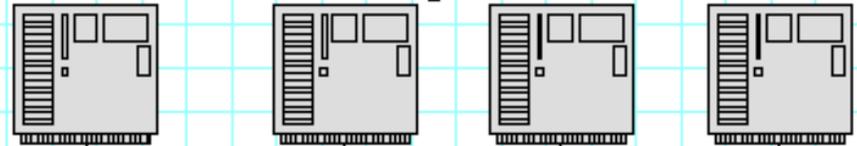
IDC Report @
www.kabira.com/idc2001/



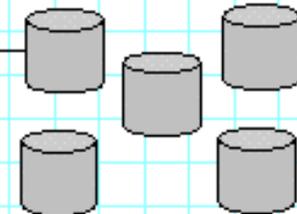
Kabira Service Modules

- Customer Management Agent
- Equipment Serial Number (ESN) Agent
- Rate Plan Agent
- Changes to Service Packages
- Service Activation and Deactivation
- Payments Process Manager

CDMA Wireless Switching for 1.7 Million Customers



Billing and Activation

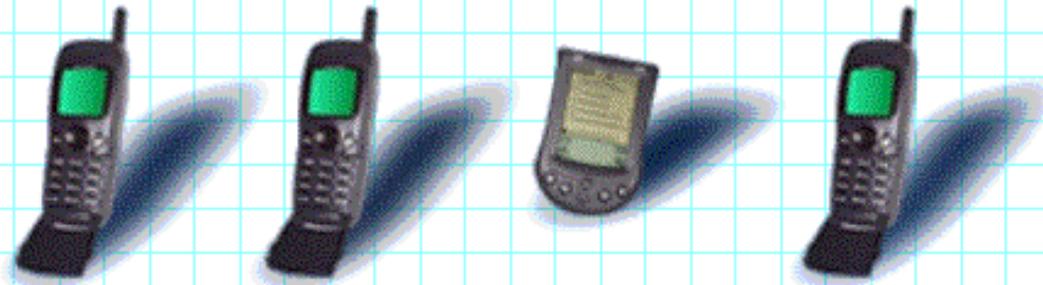
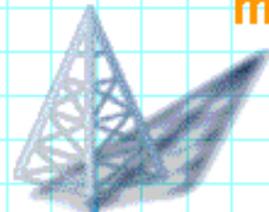


ODBC - Oracle

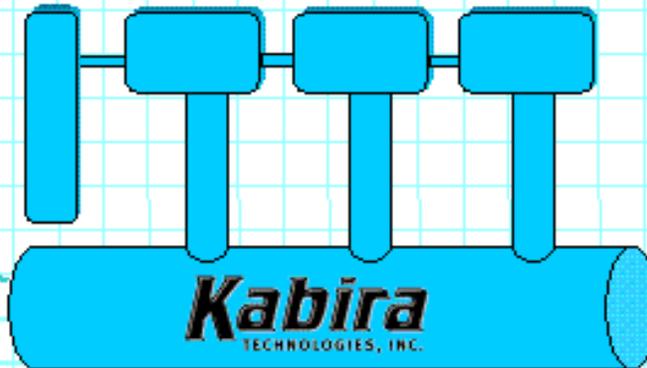


- New Activation Request
- Customer Profile Changes
- Cash Payment

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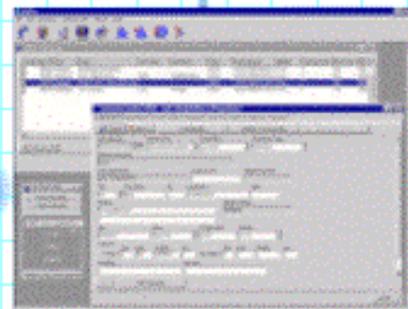
SMS Mediation



Operator

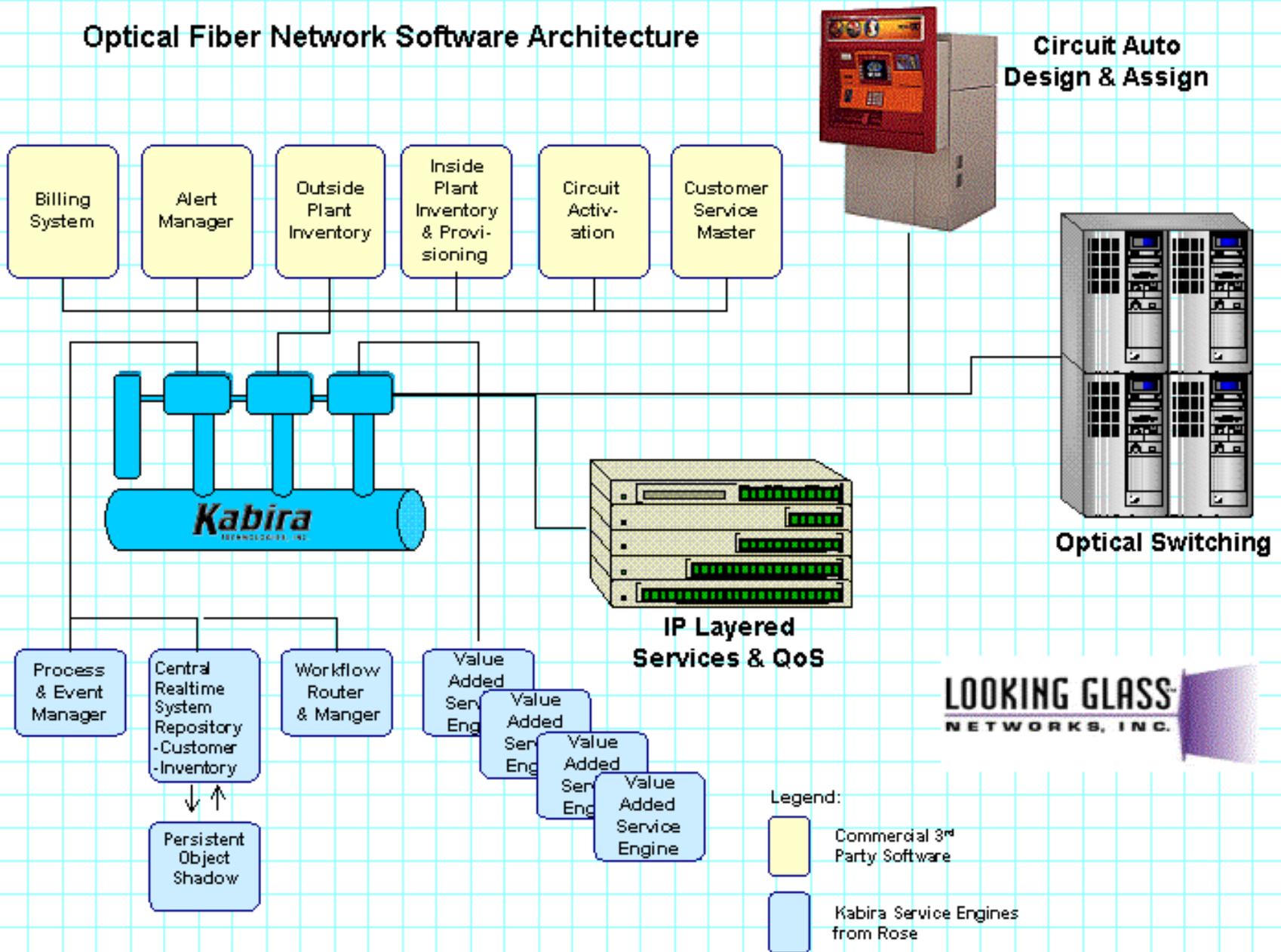


Directory
Database



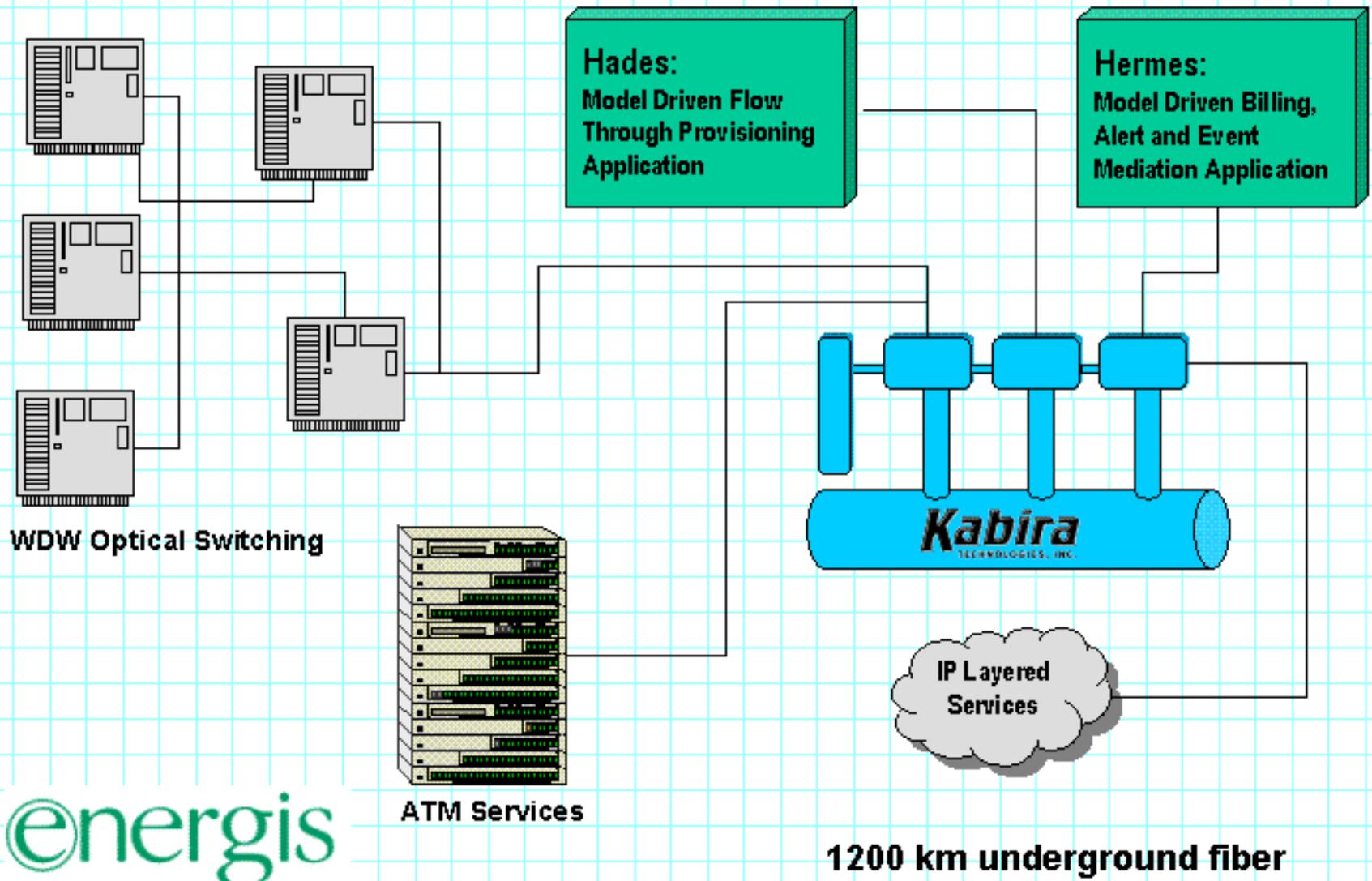
Billing

Optical Fiber Network Software Architecture

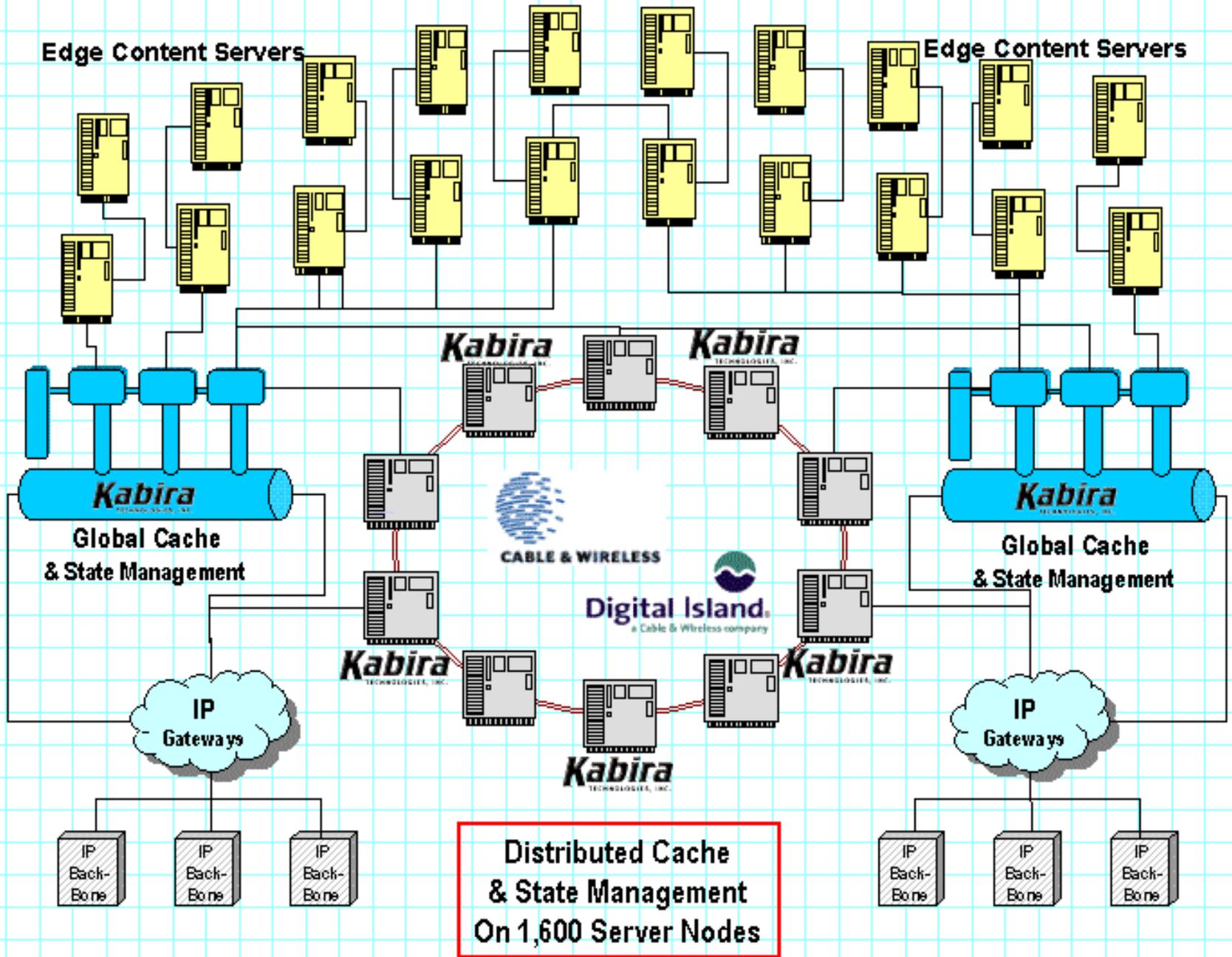


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2.5 Gb/s Wide Division Multiplexing - Upgradeable to 40 Gb/s



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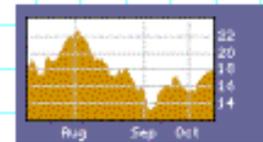


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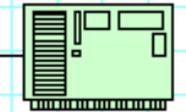
Account Trading



E*TRADE



ResearchServices

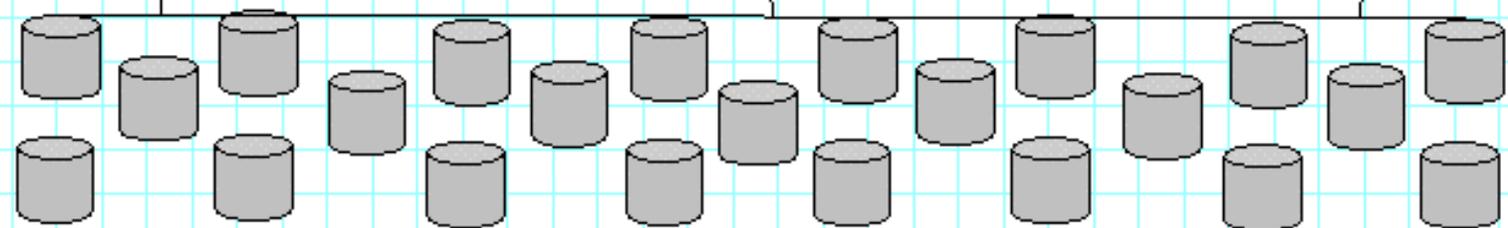
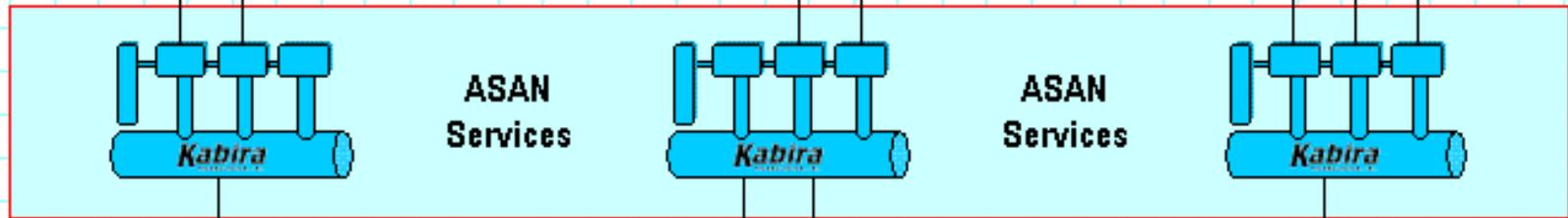


Session Authorization

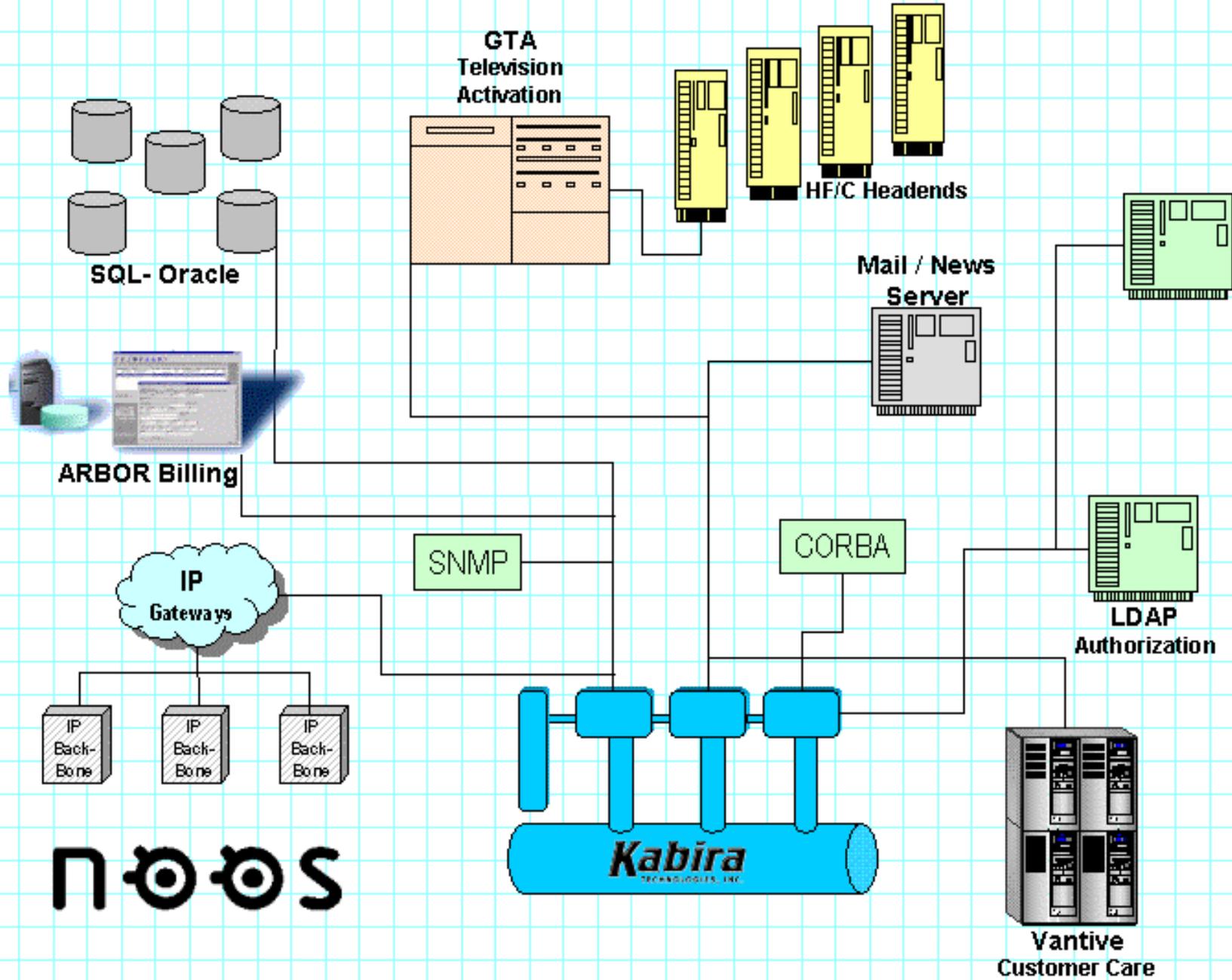
iPlanet App Server Farm

IP Redirectors

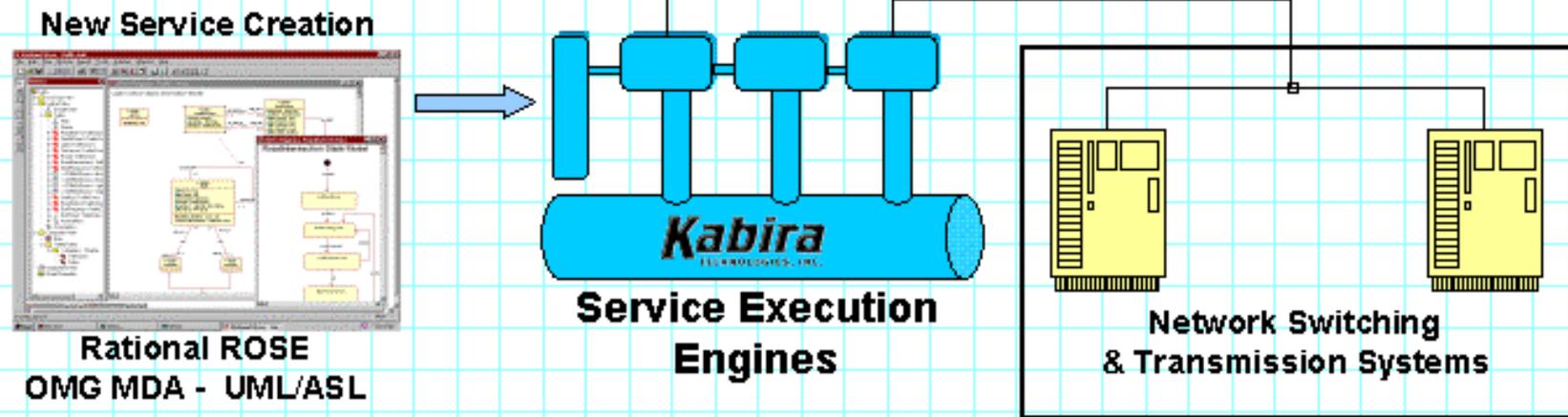
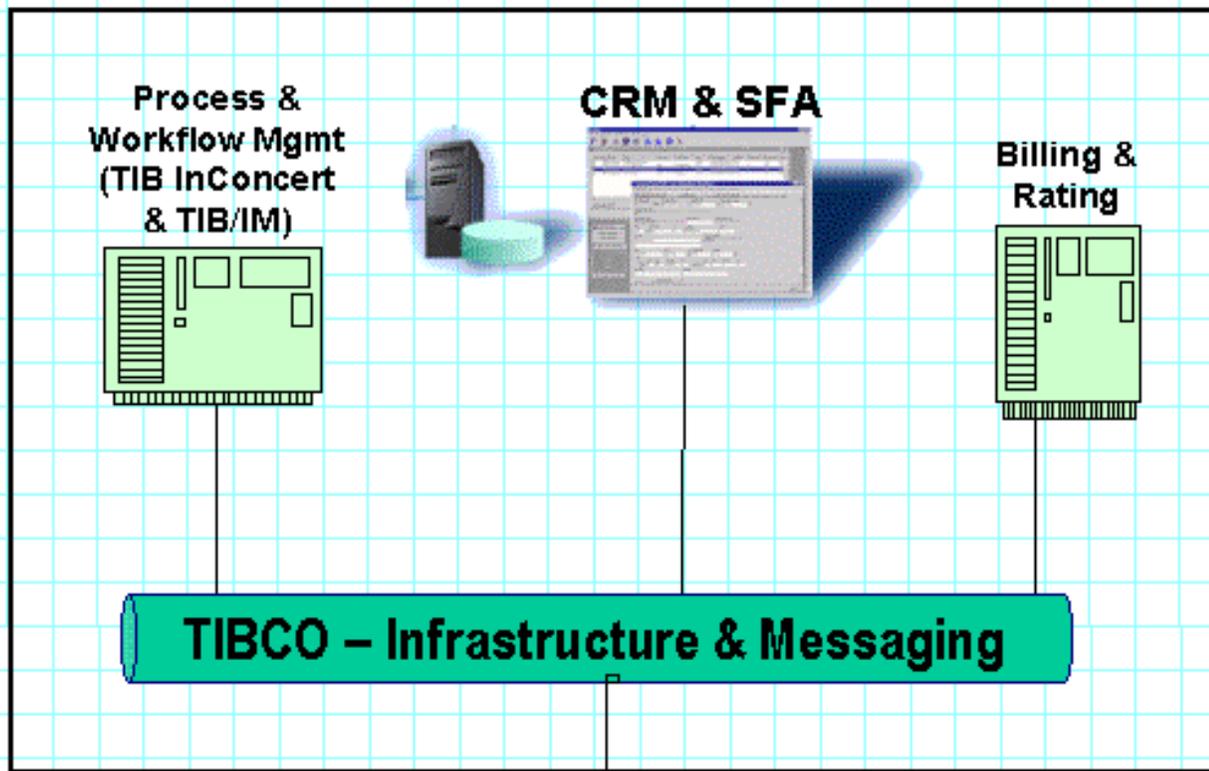
IP Redirectors



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