MAA

SOA EDG 12c

FMW MAA Team

SUMMARY

- Enterprise Deployment Guide Overview
- SOA Enterprise Deployment Guide
- New in SOA EDG 12c PS3
  - High Availability Options
  - JDBC Persitent Stores
  - Dynamic Clustering
  - OSB singleton High Availability
  - Scale-out/up

Enterprise Deployment Guide Overview

Enterprise Deployment Guide Overview

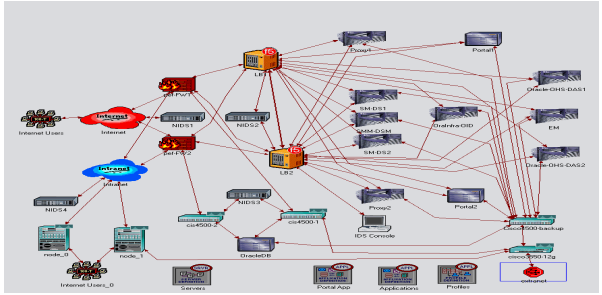
- EDG ..
  - provides **detailed**, **validated** instructions
  - that help you **plan**, **prepare**, **install**, and **configure**
  - a **multihost**, **secure**, **highly available** production topology

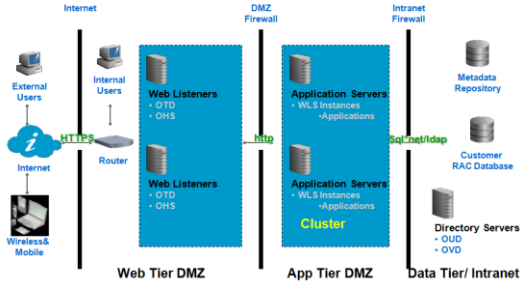
  ..for Fusion Middleware products

- Multiple Enterprise Deployment Guides:
  - SOA EDG (SOA/BPM, OSB, BAM, ESS, MFT)
  - OIM EDG (OAM, OIM..)
  - BI EDG
  - WebCenter Portal EDG
  - WebCenter Content EDG

Enterprise Deployment Overview

- Provide Oracle **tested** best practices for FMW High Availability / Maximum Availability Architecture
- With each FMW Component being a silo deployment:
  - How do I integrate with XXX ?? (OHS, OTD, OAM being great examples)
- ***Move from unsecure, un-scalable and unreliable PRODUCTION deployments to providing Homogenous and Oracle tested secure, scalable best practices for FMW components***





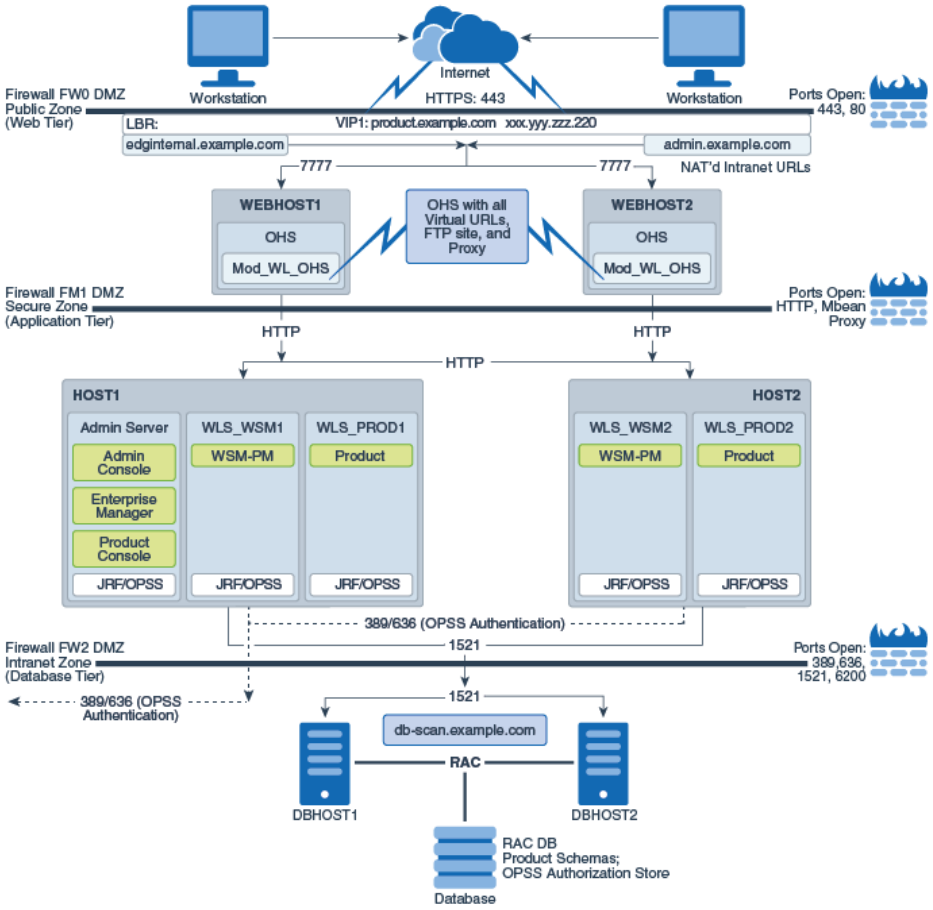
FROM THIS → TO THIS

Enterprise Deployment Overview

- **ALSO: Address the interaction with the customer's infrastructure in an integrated deployment (multiple FMW components):**
  - **Node/Host configuration** :
    - VIP allocations, open file limits, processes
  - **Load Balancer and WebTier configuration**
  - **Storage configuration:**
    - Volume configuration, tiered storage approach, separation of runtime vs. configuration artifacts
  - **Network configuration**
    - Listen addresses required, ports standardization
    - Firewalls: ports required, type of traffic
  - **Database**:
    - Processes, services, datafiles configuration, RAC DataSource configuration

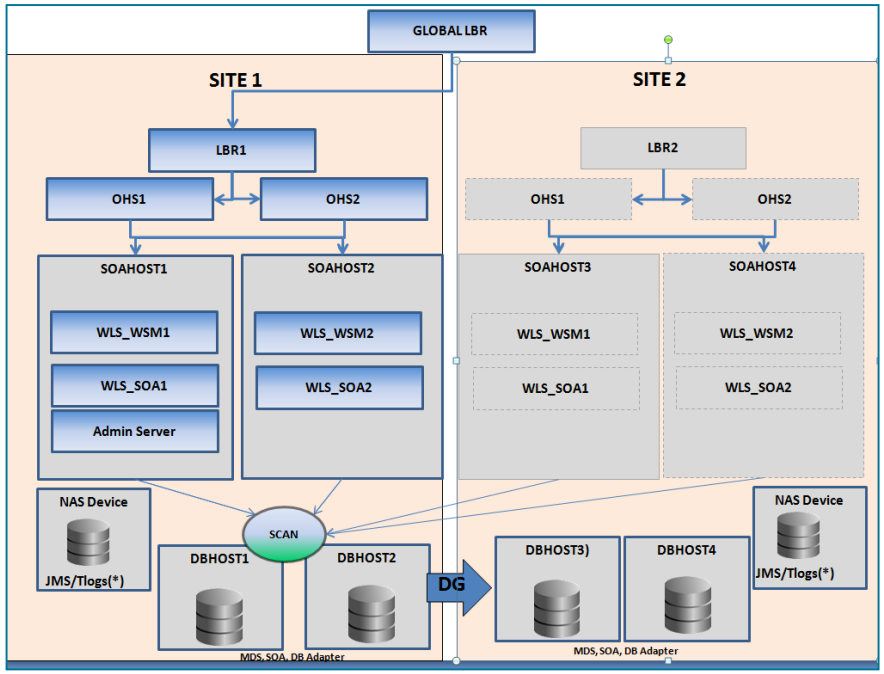
Enterprise Deployment Overview

- Tier redundancy (highlights)
  - WebTier
    - OHS: redundant OHS routed to by LBR
    - OTD: vrrp and vip failover for OTD entry
  - FMW Component Failure
    - Node Manager health monitoring
    - Inter-component failover: rmi, jms, http callbacks
    - Server and service migration best practices
  - RAC DB failure
    - FAN/ONS, SCAN, connection pool settings
  - System prepared for DR
    - Hostname as listen addresses
    - DB persistent stores

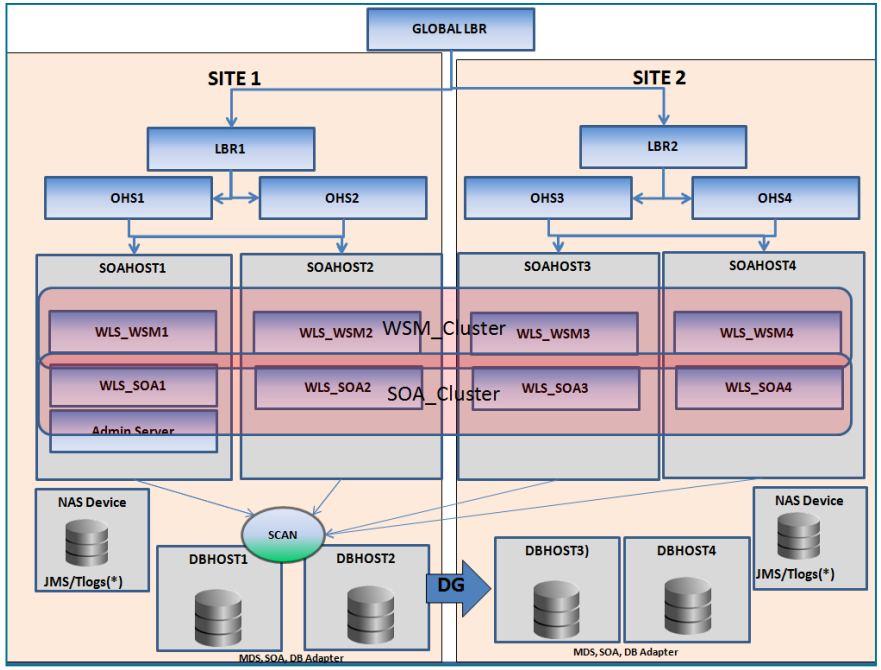


Enterprise Deployment Overview

- MAA = EDG + APDR or EDG + AADR



Active-Passive DR



Active-Active DR

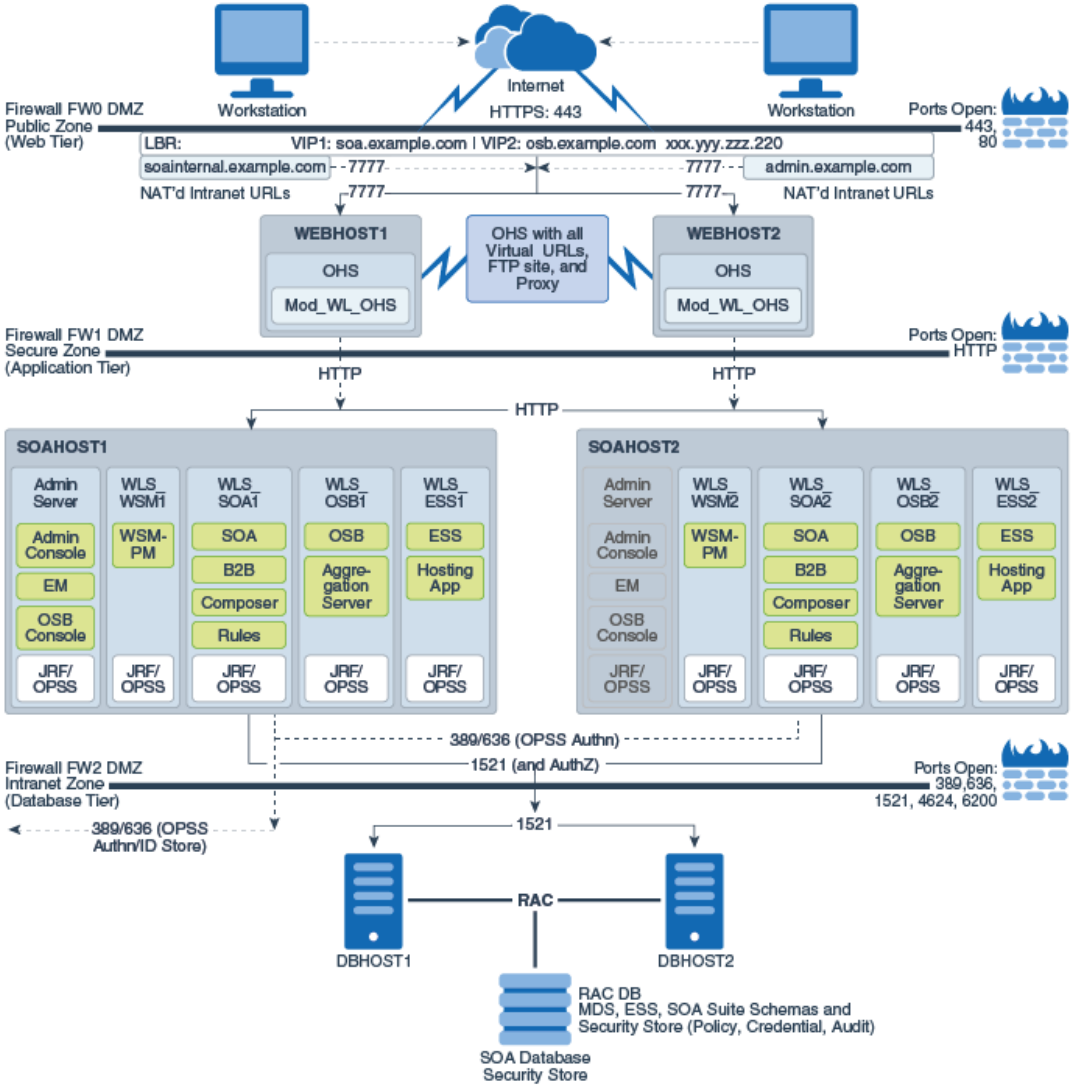
Enterprise Deployment Overview

- **Part I Understanding an Enterprise Deployment**
- **Part II Preparing for an Enterprise Deployment**
  - Set up infrastructure (LBR, RAC DB, Network, Hosts, Shared Storage)
- **Part III Configuring the Enterprise Deployment**
  - Create basic infra domain
  - Configure Webtier
  - Extend-configure-validate each component (SOA, BPM, OSB..)
- **Part IV Common configuration and Management Procedures for an Enterprise Deployment**
  - Common tasks (SSL, Role mapping, persistent stores..)
  - Configure server/service migration
  - Scaling-out/up
  - SSO

SOA Enterprise Deployment Guide

- Common properties with other EDGS:
  - Per Node NM, separate aserver vs. mserver, VIP for AS, standalone OHS, GridLink Data Sources, redundant binaries, runtime artifacts separation
- OHS and OTD instructions for webtier
- Separate Cluster for WSMPM
- Unique Coherence cluster with different caches
  - SOA for MDS/Composite Deployment, OSB Result Cache, WSMPM policies, BPM
- Sets front end address for callback and endpoint url construction
- Uses ASM with different migration policies for different clusters
  - SOA_Cluster: Auto-Migrate Failure-Recovery Services
  - OSB_Cluster: Auto-Migrate Failure-Recovery Services
  - BAM_Cluster: Auto-Migrate Exactly-Once Services
  - MFT_Cluster: Auto-Migrate Failure-Recovery Services
- File stores/JDBC persistent Stores for JMS and TLOGS
- OSB in same or different domain
- HC, MFT in separate domain

SOA Enterprise Deployment Guide

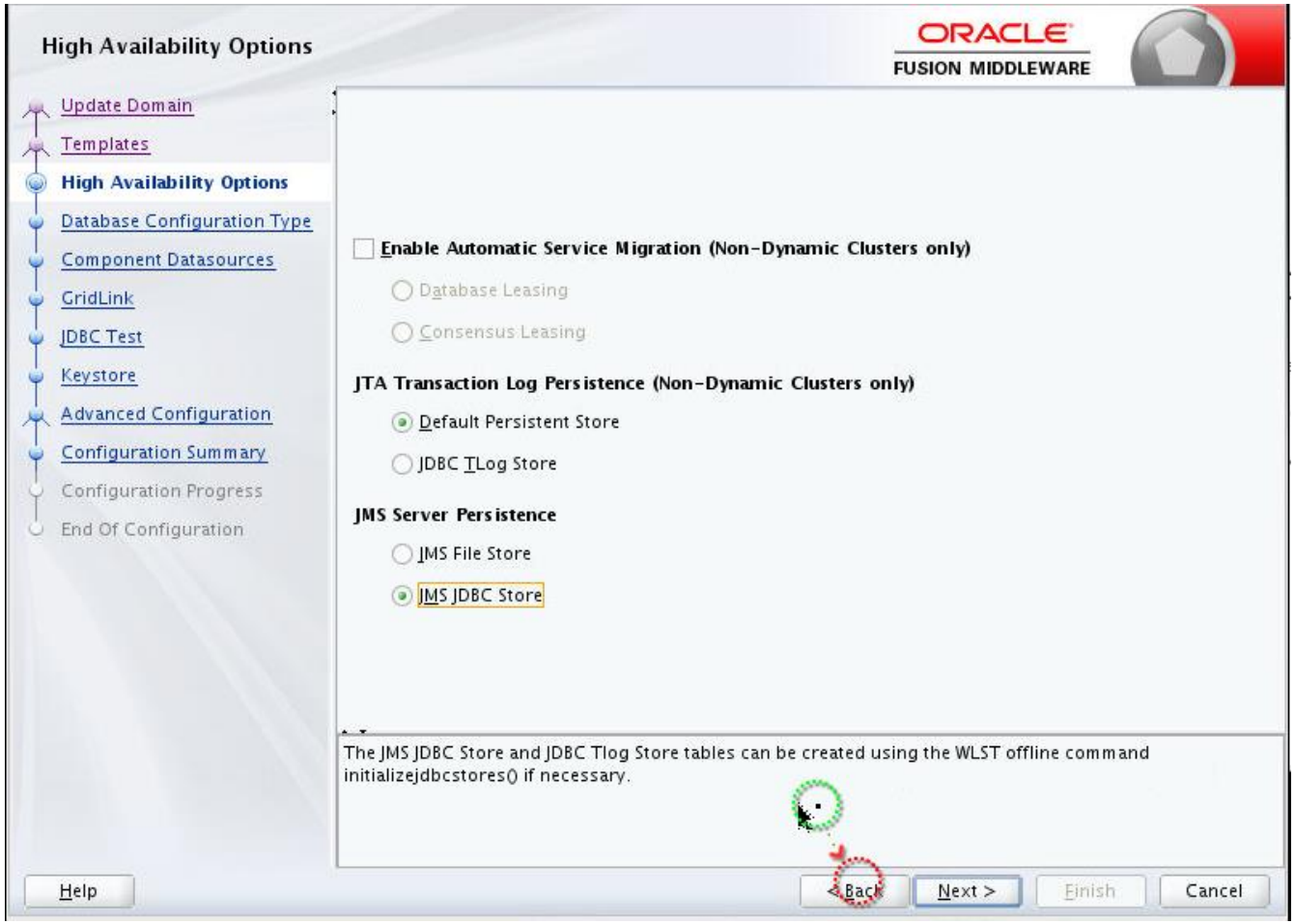


SOA Enterprise Deployment Guide

- Included in previous 12.2.1 versions
  - Moved from Whole Server Migration to Automatic Service Migrarion (10x time improvement)
  - Per-host Node Manager (simplified maintenance, lower foot print)
  - JDBC persistent stores (performance testing)
  - Multidomain models for component isolation (OSB, MFT, HC)
  - OAM/SSO integration
  - separation of runtime artifacts.
  - Oracle Traffic Director as web server
- New in 12.2.1.**3**
  - Config wizard “High Availability Options“ screen
  - JDBC persistent stores preferred, File persistent stores as an option
  - Support for Dynamic Clusters
  - Cluster syntax for t3
  - OSB singletons High Availability
  - Scale-out/up procedures

SOA EDG 12c PS3 - New

High Availability Options Screen



SOA EDG 12c PS3 - New

High Availability Options Screen

- Recommedation for Static Clusters
  - Enable ASM with database leasing
  - Enable JDBC stores

  (before these were manual post-steps)
- Supportability for Dynamic Clusters
  - Partial support (only for JMS jdbc stores)
- When does it appear?
  - The first time a component has JMS stores/transactional HA requirements
  - Inherited in subsequent extensions

SOA EDG 12c PS3 - New

High Availability Options Screen

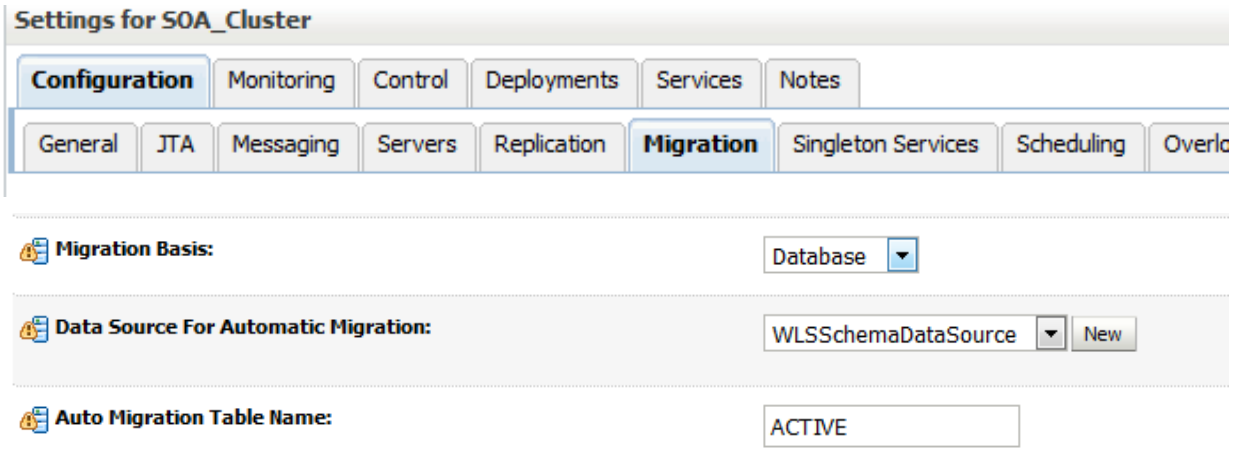
- For Static Cluster

SOA EDG 12c PS3 - New

High Availability Options Screen

- Migratable targets

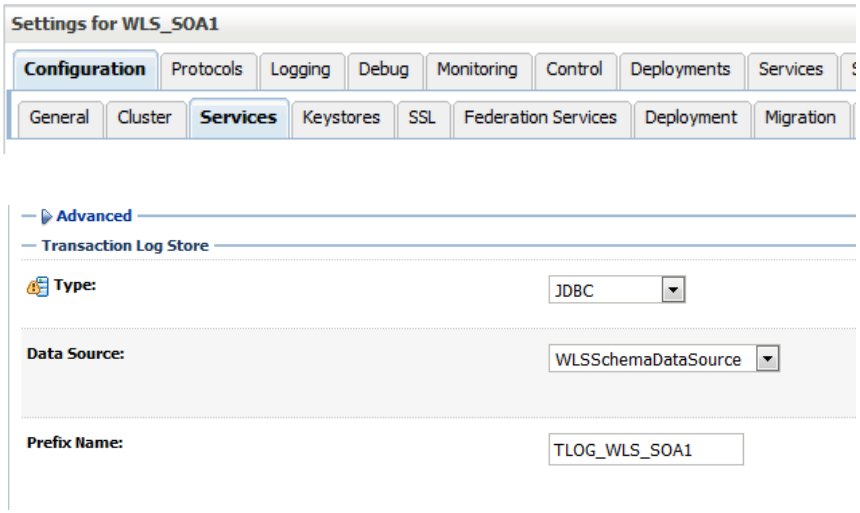
- Cluster Leasing



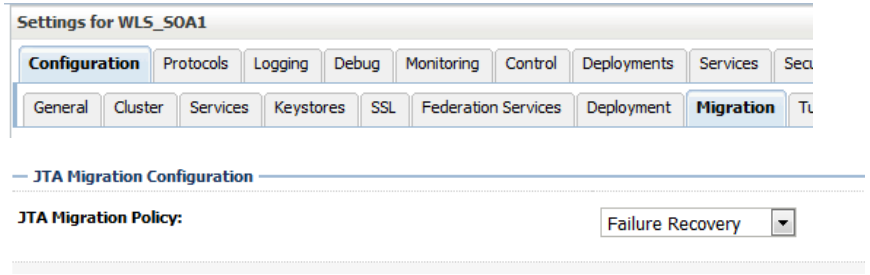
SOA EDG 12c PS3 - New

High Availability Options Screen

- TLOG store as JDBC persistent store



- Transaction migration policy for each server



SOA EDG 12c PS3 - New

High Availability Options Screen

- JDBC persistent Stores

Name	Type	Target
UMSJMSJDBCStore_auto_1	JDBCStore	WLS_SOA1 (migratable)
BPMJMSJDBCStore_auto_1	JDBCStore	WLS_SOA1 (migratable)
SOAJMSJDBCStore_auto_1	JDBCStore	WLS_SOA1 (migratable)
ProcMonJMSJDBCStore_auto_1	JDBCStore	WLS_SOA1 (migratable)
UMSJMSJDBCStore_auto_2	JDBCStore	WLS_SOA2 (migratable)
BPMJMSJDBCStore_auto_2	JDBCStore	WLS_SOA2 (migratable)
SOAJMSJDBCStore_auto_2	JDBCStore	WLS_SOA2 (migratable)
ProcMonJMSJDBCStore_auto_2	JDBCStore	WLS_SOA2 (migratable)
FODJDBCStore_2	JDBCStore	WLS_SOA2 (migratable)

- JMS Servers

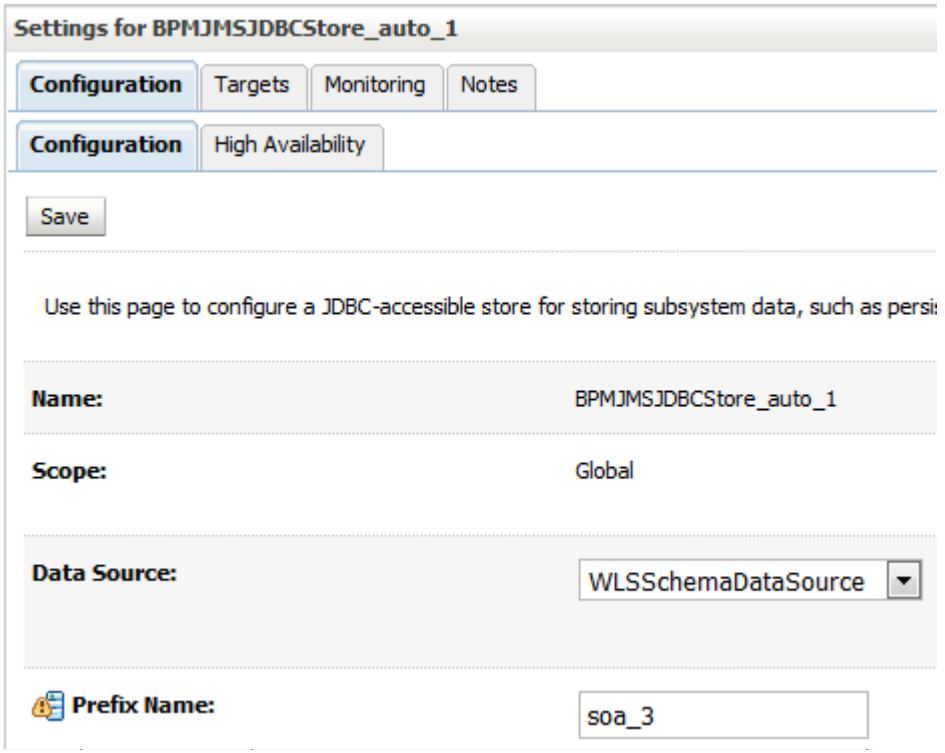
Name	Persistent Store	Target
UMSJMSServer_auto_1	UMSJMSJDBCStore_auto_1	WLS_SOA1 (migratable)
BPMJMSServer_auto_1	BPMJMSJDBCStore_auto_1	WLS_SOA1 (migratable)
SOAJMSServer_auto_1	SOAJMSJDBCStore_auto_1	WLS_SOA1 (migratable)
ProcMonJMSServer_auto_1	ProcMonJMSJDBCStore_auto_1	WLS_SOA1 (migratable)

SOA EDG 12c PS3 - New

High Availability Options Screen

- JDBC persistent Stores

Name
UMSJMSJDBCStore_auto_1
BPMJMSJDBCStore_auto_1
SOAJMSJDBCStore_auto_1
ProcMonJMSJDBCStore_auto_1
UMSJMSJDBCStore_auto_2
BPMJMSJDBCStore_auto_2
SOAJMSJDBCStore_auto_2
ProcMonJMSJDBCStore_auto_2
FODJDBCStore_2



- JMS Servers

Name	Persistent Store	Target
UMSJMSServer_auto_1	UMSJMSJDBCStore_auto_1	WLS_SOA1 (migratable)
BPMJMSServer_auto_1	BPMJMSJDBCStore_auto_1	WLS_SOA1 (migratable)
SOAJMSServer_auto_1	SOAJMSJDBCStore_auto_1	WLS_SOA1 (migratable)
ProcMonJMSServer_auto_1	ProcMonJMSJDBCStore_auto_1	WLS_SOA1 (migratable)

SOA EDG 12c PS3 - New

High Availability Options Screen

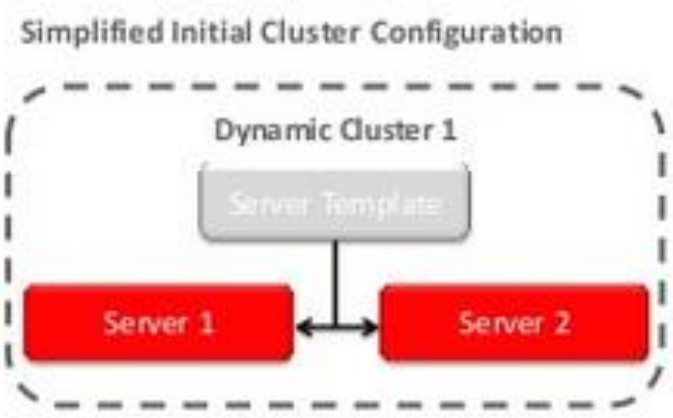
Name	Type	JNDI Name	Targets
WLSSchemaDataSource	GridLink	jdbc/WLSSchemaDataSource	AdminServer, BAM_Cluster, OSB_Cluster, SOA_Cluster

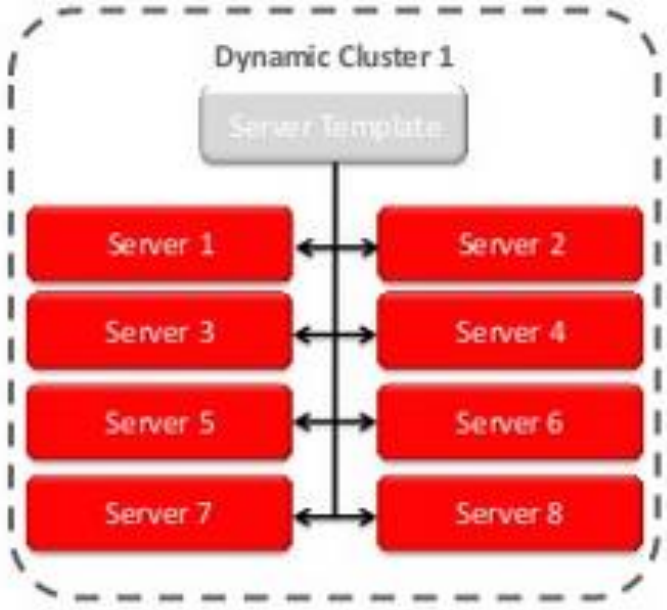
- WLSSchemaDataSource used for:
  - Cluster Database leasing
  - TLOG jdbc persistent stores
  - JMS jdbc persistent stores

SOA EDG 12c PS3 - New

Dynamic Clusters

- Dynamic cluster:
  - server instances that can be dynamically scaled up
  - cluster uses a single-server template to define configuration
  - The number of dynamic server instances is specified

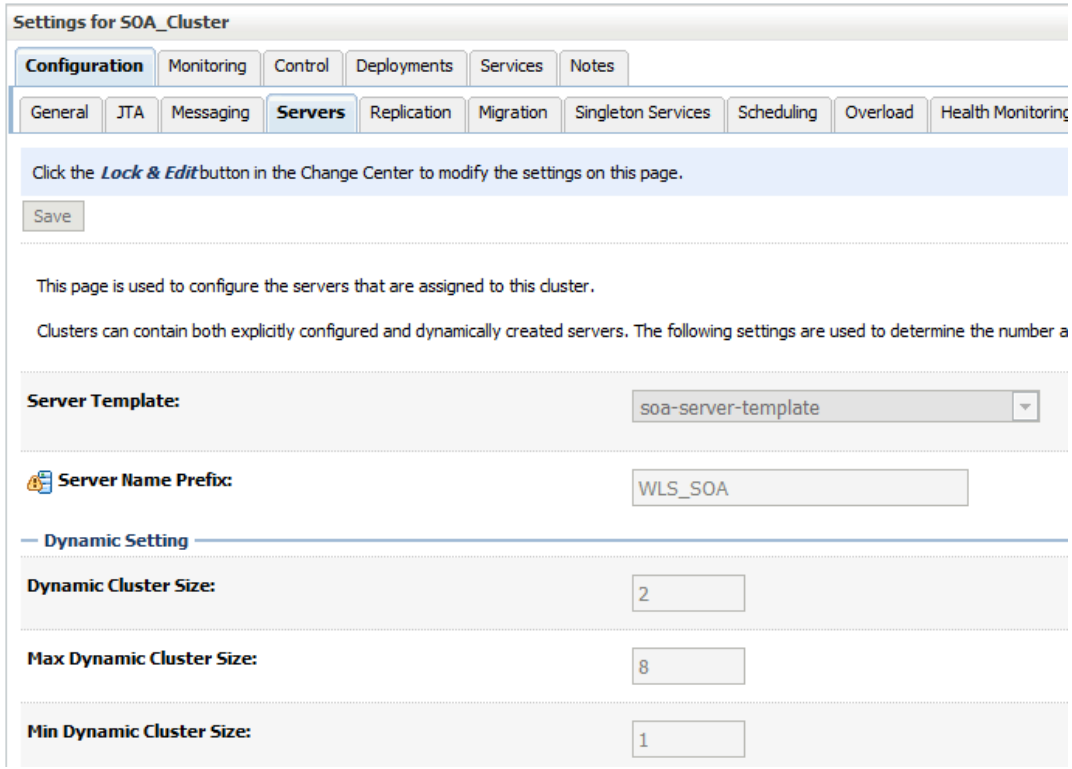


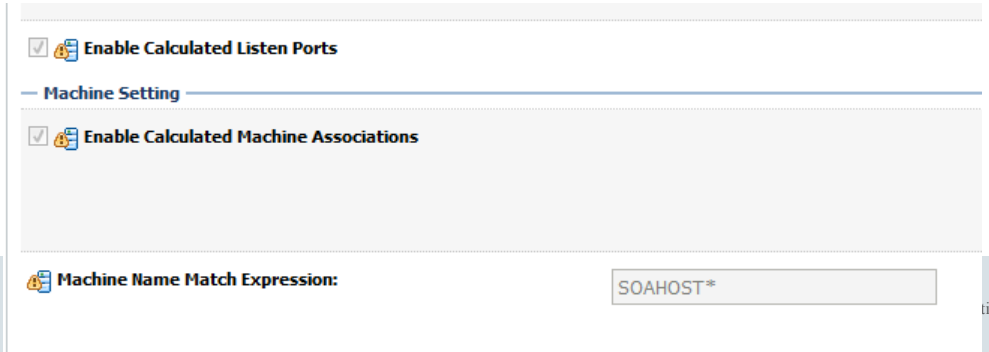


SOA EDG 12c PS3 - New

Dynamic Clusters

- Cluster





SOA EDG 12c PS3 - New

Dynamic Clusters

- Calculating Machine Names

Machines in Domain	`MachineNameMatchExpression` Configuration	Dynamic Server Machine Assignments
M1, M2	Not set	dyn-server-1: M1 dyn-server-2: M2 dyn-server-3: M1 ...
Ma1, Ma2, Mb1, Mb2	Ma1, Mb*	dyn-server-1: Ma1 dyn-server-2: Mb1 dyn-server-3: Mb2 dyn-server-4: Ma1

- MachineNameMatchExpression in SOA EDG is SOAHOST*:
  - SOAHOST1, SOAHOST2

SOA EDG 12c PS3 - New

Dynamic Clusters

- Calculated listen ports

Table 11-1 Calculating Listen Ports

Listen Port Type	Configuration Setting in Server Template	Dynamic Server Listen Port Values
Server listen port	Listen port not set	dyn-server-1: 7101 dyn-server-2: 7102 ...
Server listen port	Listen port set to 7300	dyn-server-1: 7301 dyn-server-2: 7302

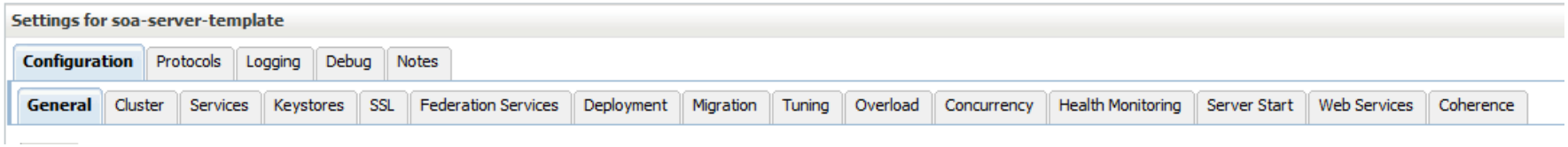
- Calculated listen ports are used in EDG for dynamic clusters

SOA EDG 12c PS3 - New

Dynamic Clusters

- Server Templates

Name	Cluster
ess-server-template	ESS_Cluster
osb-server-template	OSB_Cluster
soa-server-template	SOA_Cluster
wsmpm-server-template	WSM-PM_Cluster



SOA EDG 12c PS3 - New

Dynamic Clusters

- Listen Address
  - Is not calculated
  - By default empty (listen in ALL)
  - Macros can be used:
    - WLS_SOA1 listens in SOAHOST1, WLS_SOA2 listens in SOAHOST2

    - When scaling-up/more than 1 server per machine

  - Hostname aliases
    - EDG: 22.1.3 Configuring Listen Addresses in Dynamic Cluster Server Templates

SOA EDG 12c PS3 - New

Dynamic Clusters

- JMS resources
  - Not a JMS Server per managed server → One JMS Server targeted to the cluster
  - Associated persistent stores targeted to the cluster also

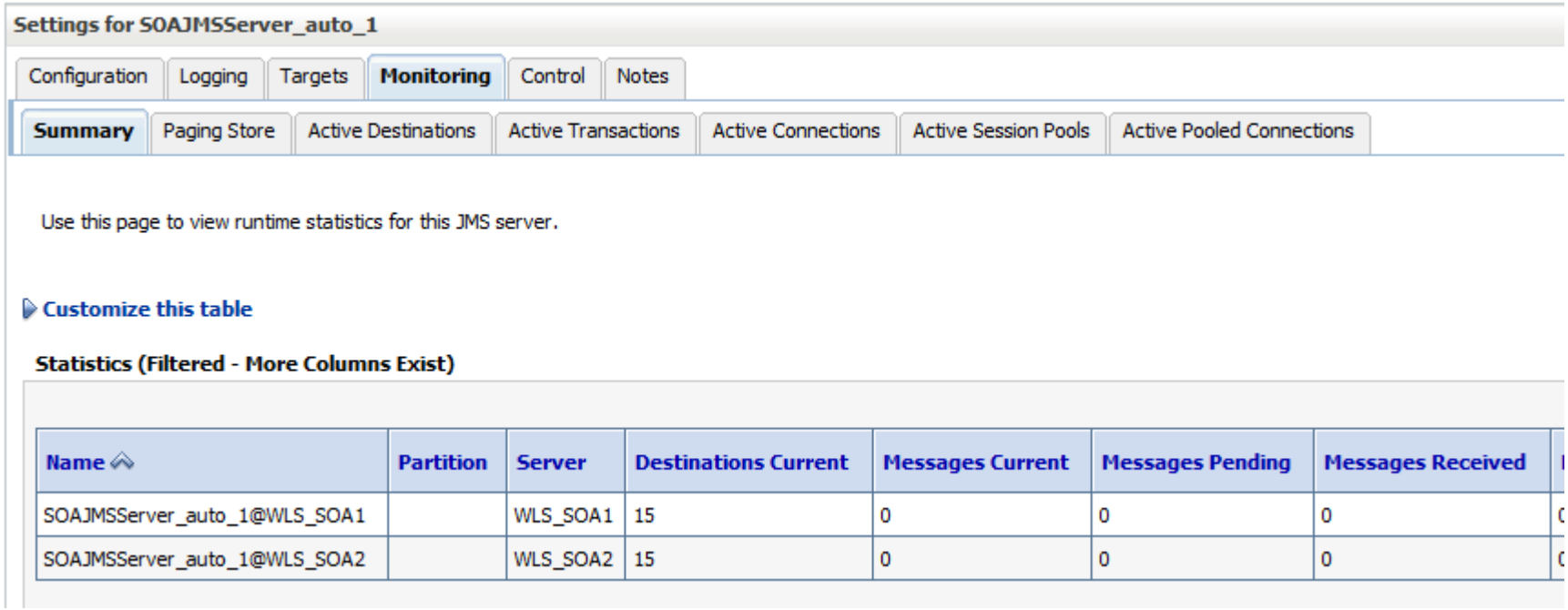
Name	Persistent Store	Target	Current Target
BPMJMSServer_auto_1	BPMJMSJDBCStore_auto_1	SOA_Cluster	SOA_Cluster
ProcMonJMSServer_auto_1	ProcMonJMSJDBCStore_auto_1	SOA_Cluster	SOA_Cluster
SOAJMSServer_auto_1	SOAJMSJDBCStore_auto_1	SOA_Cluster	SOA_Cluster
UMSJMSServer_auto_1	UMSJMSJDBCStore_auto_1	SOA_Cluster	SOA_Cluster

Name	Type	Target
BPMJMSJDBCStore_auto_1	JDBCStore	SOA_Cluster
SOAJMSJDBCStore_auto_1	JDBCStore	SOA_Cluster
UMSJMSJDBCStore_auto_1	JDBCStore	SOA_Cluster
ProcMonJMSJDBCStore_auto_1	JDBCStore	SOA_Cluster

SOA EDG 12c PS3 - New

Dynamic Clusters

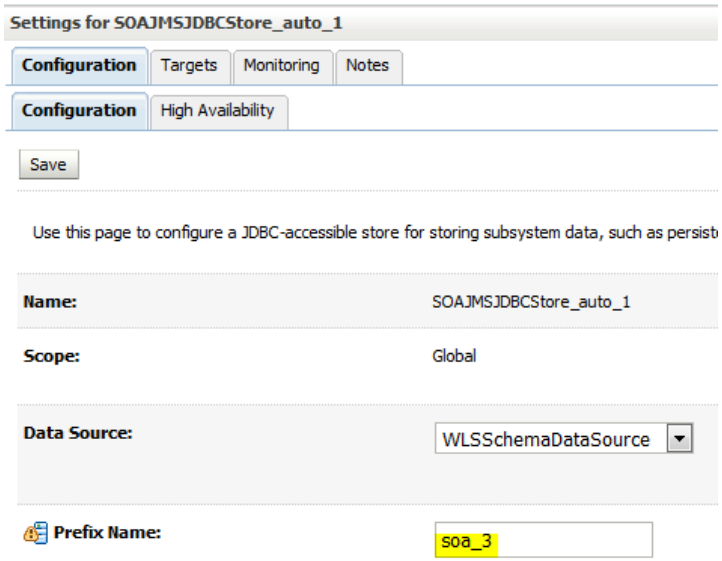
- JMS Servers runtime

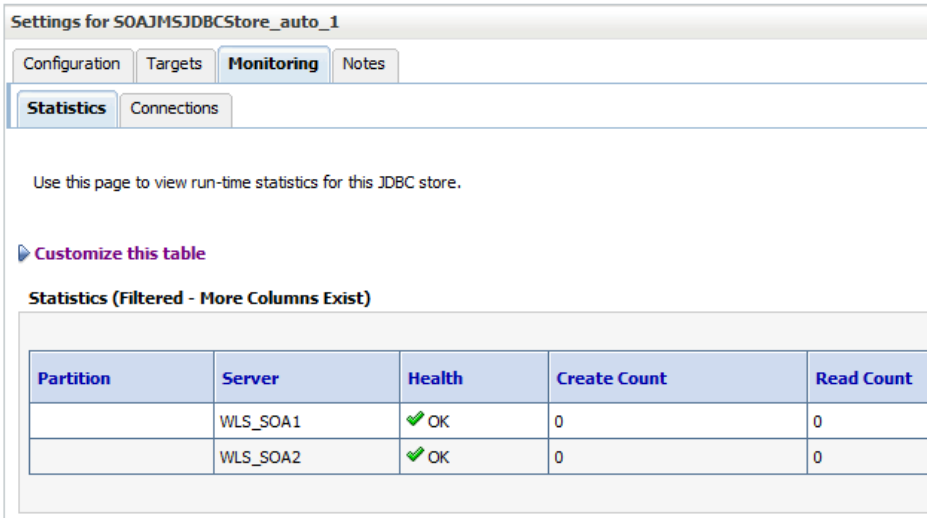


SOA EDG 12c PS3 - New

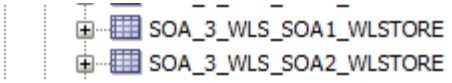
Dynamic Clusters

- Persistent Store runtime





N Database tables



SOA EDG 12c PS3 - New

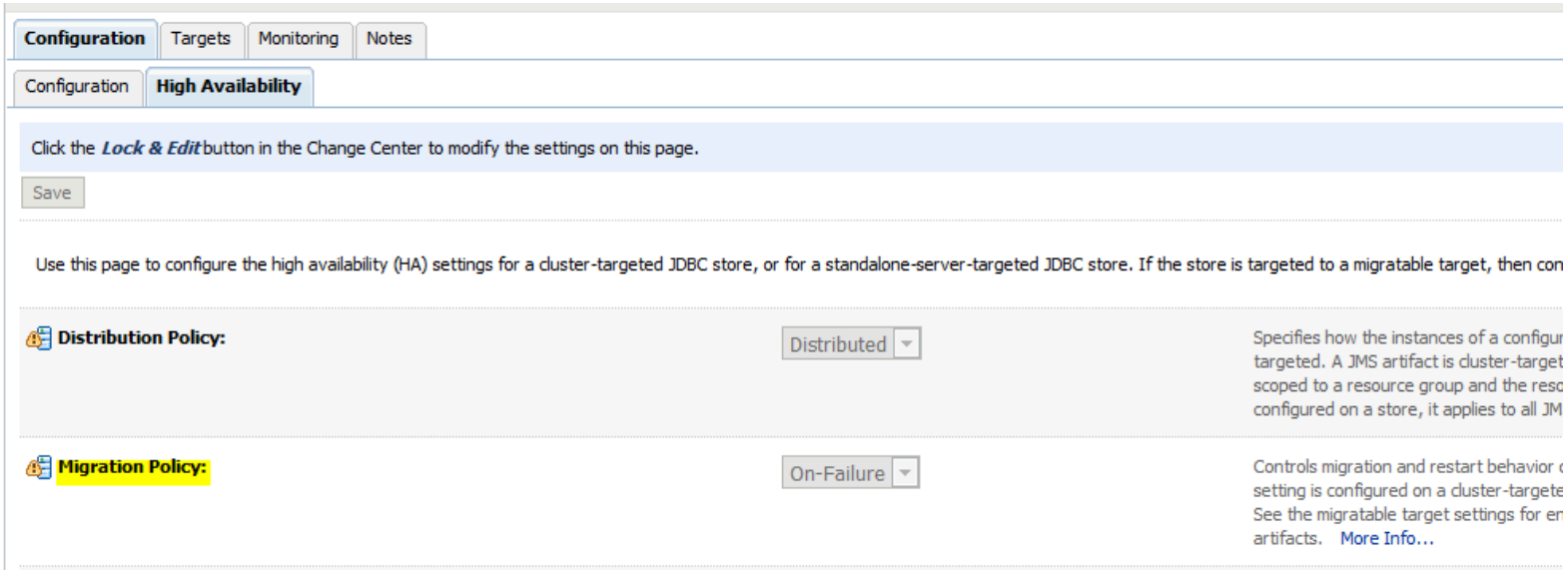
Dynamic Clusters

- Some Limitations:
  - Not supported in some products (BAM)
  - No individual definitions for each server
  - Do not support targeting to any individual dynamic server instance
  - Simplified JMS cluster resources have also limitations:
    - Replicated distributed topis not supported
    - Weighted distriuted destinations not supported
    - Hash based UUO routing not supported, path service is needed

SOA EDG 12c PS3 - New

Dynamic Clusters

- Automatic migration in Dynamic Clusters
  - Leasing (database recommended) must be defined for the cluster (= SC)
  - JTA migration policy must be defined in the server template (similar SC)
  - JMS migration policies must defined in Persistent Stores (no migratable targets!)



SOA EDG 12c PS3 - New

Dynamic Clusters

- Automatic migration in Dynamic Clusters
  - Both servers UP

Name	Partition	Server	Destinations Current	Messages Current	M
SOAJMSServer_auto_1@WLS_SOA1		WLS_SOA1	16	0	0
SOAJMSServer_auto_1@WLS_SOA2		WLS_SOA2	15	0	0

  - Kill server WLS_SOA1

Name	Partition	Server	Destinations Current	Messages Current	Messages Pending	Mes
SOAJMSServer_auto_1@WLS_SOA1		WLS_SOA2	15	0	0	1
SOAJMSServer_auto_1@WLS_SOA2		WLS_SOA2	15	0	0	0

  - Start WLS_SOA1 → AUTOMATIC FAILBACK

Name	Partition	Server	Destinations Current	Messages Current	M
SOAJMSServer_auto_1@WLS_SOA1		WLS_SOA1	16	0	0
SOAJMSServer_auto_1@WLS_SOA2		WLS_SOA2	15	0	0

SOA EDG 12c PS3 - New

Cluster syntax

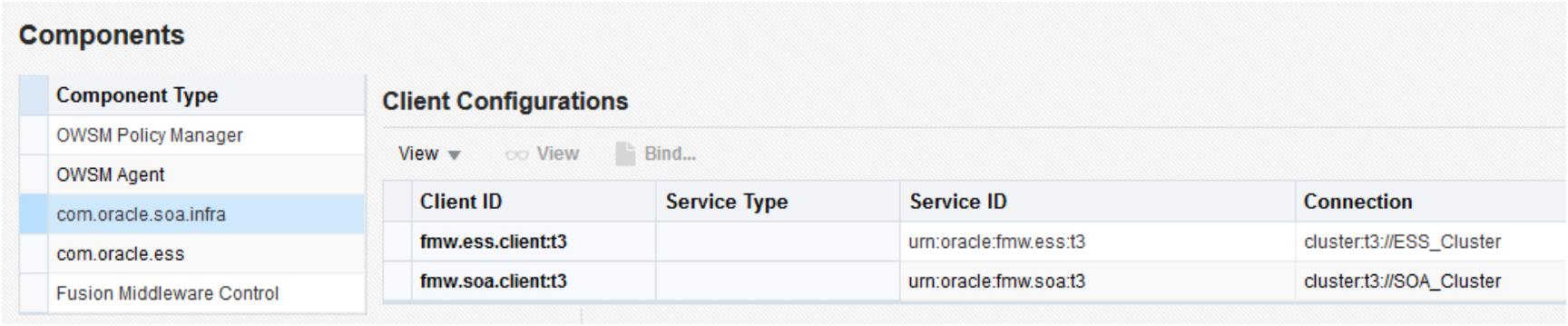
- All servers syntax for t3:

  t3://server1:port1,server2:port2,server3:port3…

- Cluster syntax for t3:

  cluster:t3://cluster_name

- The invocation fetches the complete list of members in the cluster at any given time → Best support for Dynamic Clusters



Note that you can use this cluster syntax only when the cluster is in the same domain.

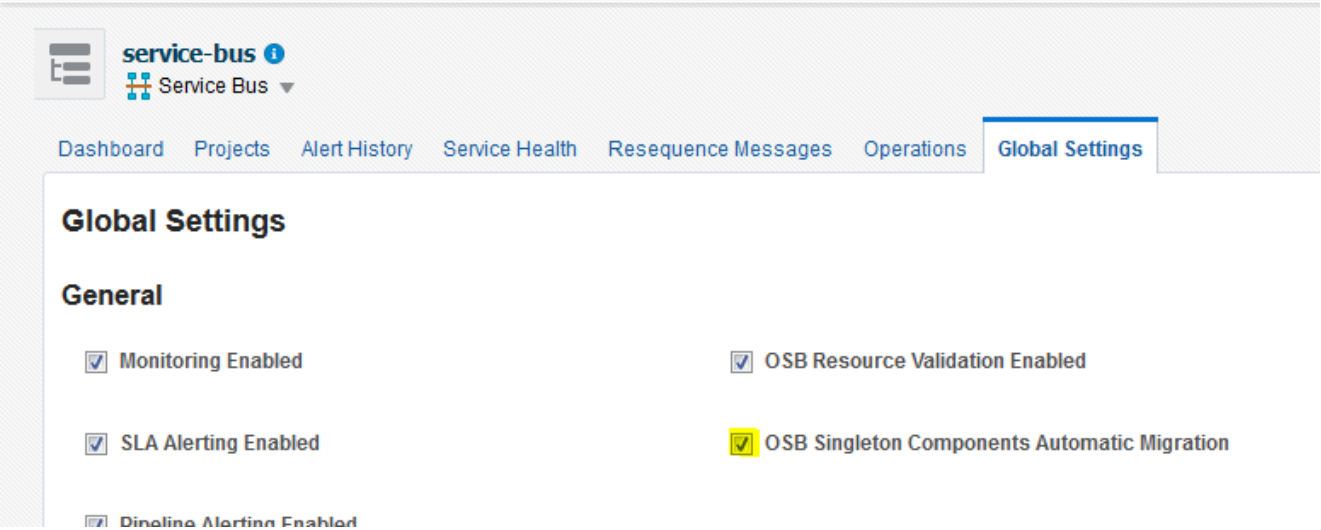
SOA EDG 12c PS3 - New

OSB Singletons High Availability

- OSB specific singleton components:
  - Aggregator Server & SLA
  - OSB Poller transports (ftp poller, File poller, Mail poller)
- Before:
  - Apps. targeted only to 1 server in the cluster (1st osb server)
  - Poller proxy services have a preferred server selected
  - Manual intervention needed to re-target if server 1 goes down
- Now:
  - All are singleton (WebLogic Singleton Framework), like ”exactly-once” policy
  - Migrate automatically to other server when the server stop/fail

SOA EDG 12c PS3 - New

OSB Singletons High Availability

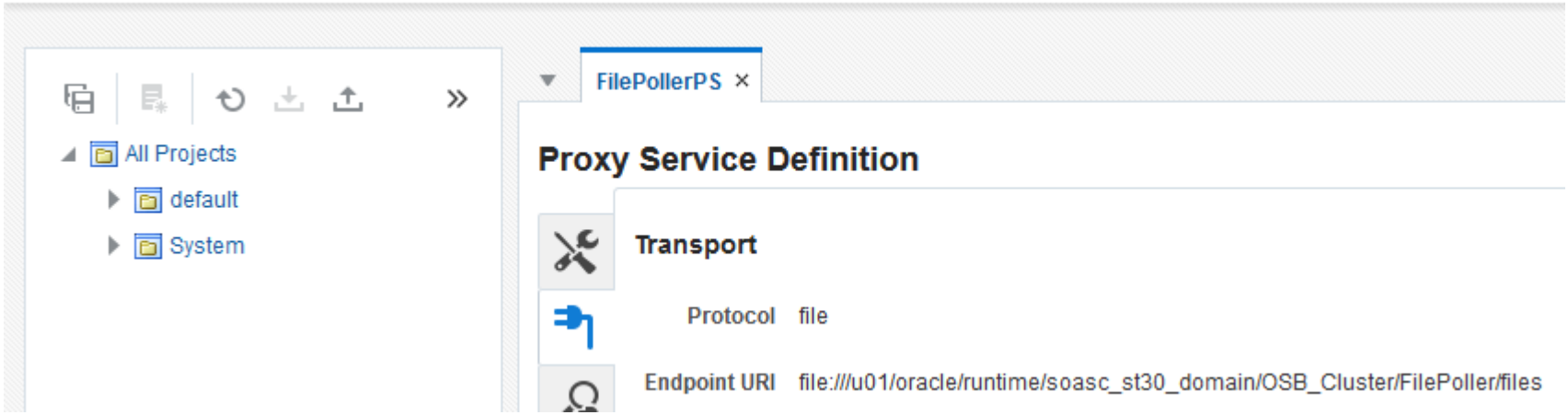


- Enabled by default if:
  - ASM selected in High Availability Options screen
  - In Dynamic Cluster (individual targeting not allowed in DC)

SOA EDG 12c PS3 - New

OSB Singletons High Availability

- File Poller sample in dynamic cluster



- Singleton Deployment

	SB_FILE_Proxy_a852c2c.121df8ae.0.15c9bc2e54b.N8000	New		Enterprise Application	OSB_Cluster	Global

SOA EDG 12c PS3 - New

OSB Singletons High Availability

- Both servers UP

```
select * from FMWDCST30_WLS_RUNTIME.ACTIVE
```

	SERVER	INSTANCE	DOMAINNAME	CLUSTERNAME
1	service.default-TransportPollers-FilePollerPS	6747972434590956367/WLS_OSB2	soadc_st30_domain	OSB_Cluster
2	service.SINGLETON_MASTER	6747972434590956367/WLS_OSB2	soadc_st30_domain	OSB_Cluster
3	service.Appscoped_Singleton_Service_Initializer	6747972434590956367/WLS_OSB2	soadc_st30_domain	OSB_Cluster

- Kill/stop server WLS_OSB2
- Singleton poller migrates to WLS_OSB1

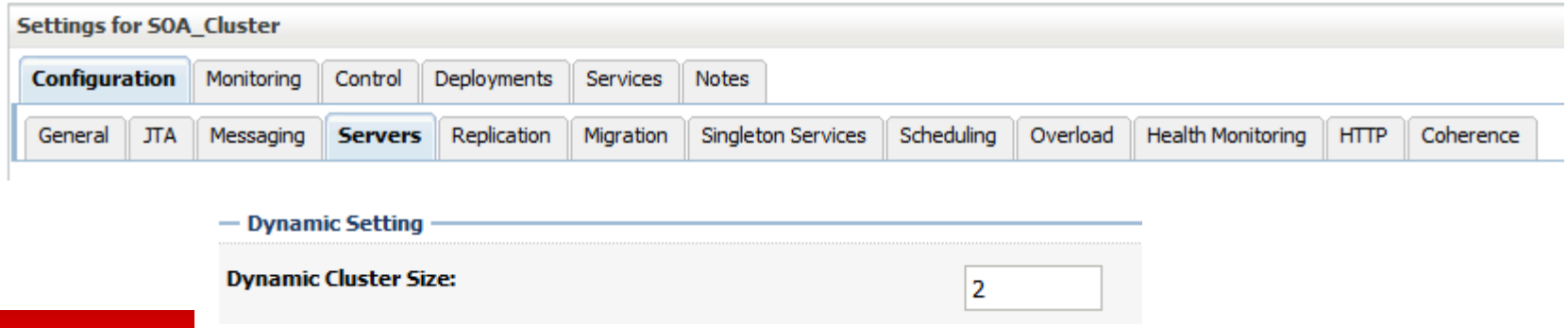
	SERVER	INSTANCE	DOMAINNAME	CLUSTERNAME
1	service.SINGLETON_MASTER	-152349001923049885/WLS_OSB1	soadc_st30_domain	OSB_Cluster
2	service.Appscoped_Singleton_Service_Initializer	-152349001923049885/WLS_OSB1	soadc_st30_domain	OSB_Cluster
3	service.default-TransportPollers-FilePollerPS	-152349001923049885/WLS_OSB1	soadc_st30_domain	OSB_Cluster

<BEA-000189> <The Singleton Service default-TransportPollers-FilePollerPS is now active on this server.>

SOA EDG 12c PS3 - New

Scale-out/up procedures

- Included again scale-out and scale-up procedures for SOA
- Static clusters scale-out/up
  - Clone server
  - Configure migratable targets
  - Configured all the JMS persitent stores, JMS servers for the new server
  - …
- Dynamic clusters scale-out/up
  - No need to created new resouces: resources are targeted to the cluster

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