

Smart Service Discovery & Selection Tool

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CloudSocket

Problem

- Manual selection of cloud services
 - Impossible for large solution space
 - Individual selection at different levels leads to sub-optimal results
 - Design choices might be involved
 - Use external SaaS or deploy a software component as internal SaaS
- Most cloud service allocation frameworks deal with one level
 - Low accuracy encountered due to non-consideration of semantics

Solution

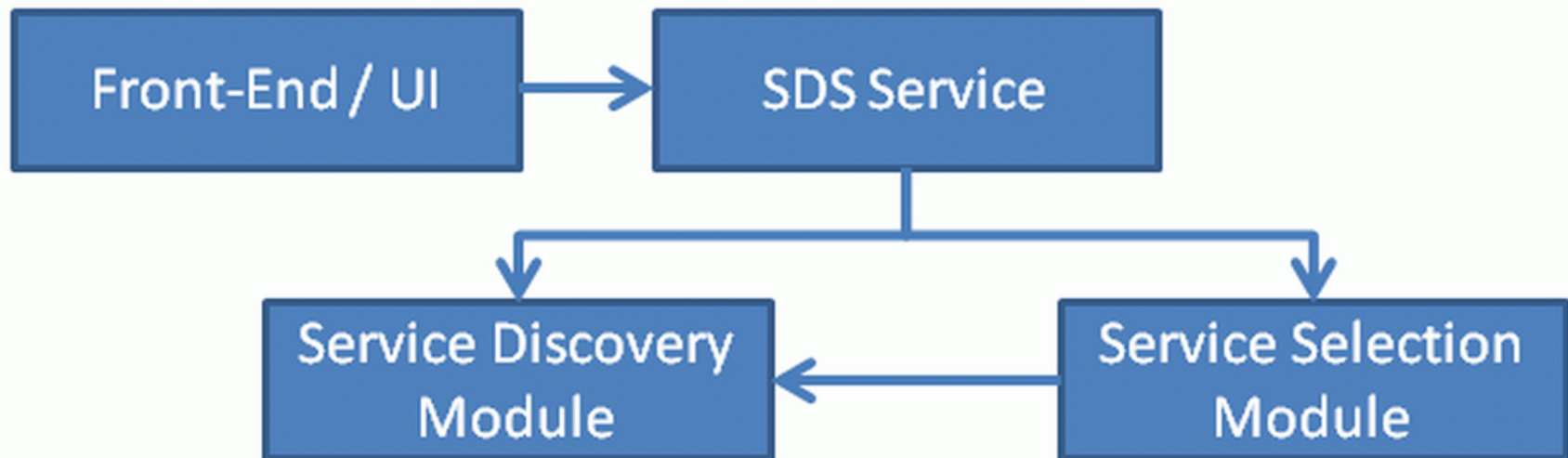
- Benefits:
 - Automation in service selection
 - Bundle development time accelerated
 - Faster time-to-market for BPaaS bundles
- 1st Solution Part: Semantic service discovery to cover both functional and non-functional aspects & increase accuracy
 - Based on state-of-the-art algorithms & frameworks with fast performance and suitable scalability levels
 - Possibility to configure the tool to use different aspect-specific algorithms

Solution

- 2nd Solution Part: Cross-level service selection to identify the best possible / optimal solutions
 - Optimal selection of services according to global as well as local (i.e., specific to BPaaS components) requirements
 - Requirements span performance (e.g., response time), cost, location, deployment (component co-location), security (security controls and security properties/metrics like mean incident resolution time)
 - Ability to confront any kind of metric, constraint or utility function
 - Ability to derive a solution even if user requirements are over-constrained
 - Normal selection algorithms would fail as no solution will be derived if all user requirements are considered as hard in this case
 - Fast solving time through the exploitation of best deployment facts enabling to fix some parts of the optimisation problem to solve

Overall Architecture

Smart Service Discovery & Composition Module



Showcase – BPaaS Allocation

- Rely on Send Invoice use case
 - Service components allocation:
 - Invoice Ninja to IaaS services
 - CRM to SaaS services
- Demonstrates the capability of user to better explore the solution space in an automatic manner
- Current Context:
 - Broker requirements:
 - global availability should be greater than 98%
 - total price per month should be less than 135 \$
 - CRM service reliability should be greater than 0.8
 - CRM response time should be less or equal to 20 seconds
 - Invoice Ninja should be hosted on a VM with the following characteristics: 2 cores, 4 GBs of main memory and 20 GBs of hard disk. In addition, the OS for the VM should be ubuntu.
 - Provider offerings covering the IaaS and SaaS levels as shown in next slide

Showcase – Cloud Services

SaaS	availability	reliability	Response time	pricing
SugarCRM	99.978 %	0.85	10 sec	10 \$ / month
Zoho CRM	99.9 %	0.7	25 sec	3 \$ / month
YMENS CRM	99.9 %	0.8	20 sec	7.5 \$ / month

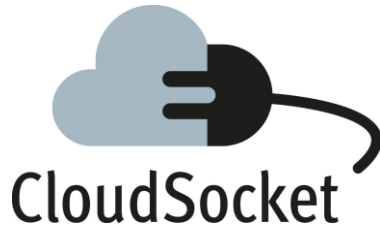
IaaS Name	Provider	Core Number	Memory Size	Storage Size	Availability	Pricing
t2.medium	Amazon	2	4 GB	20 GB	99.95%	0.172 \$ / hour
t2.large	Amazon	2	8 GB	20 GB	99.95%	0.219 \$ / hour
A2 V2	Azure	2	4 GB	20 GB	99.9 %	0.136 \$ / hour
F2	Azure	2	4 GB	32 GB	99.9 %	0.221 \$ / hour

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