

CLAIMS

1. A computer-implemented method for controlling state updates in a cloud service environment, the method comprising:

maintaining a set of state provider definitions in a state provider registry by a state provider management service, each state provider definition comprising a set of required input variable definitions, a set of output variable definitions and related metadata;

upon invoking a service determining a set of input variable definitions required by the invoked service;

receiving the determined set of input variable definitions by the state provider management service;

selecting, by the state provider management service, a state provider definition by referring to the state provider registry, wherein the selected state provider definition is to be compatible with the received set of input variable definitions;

determining a set of state provider services matching the selected state provider definition;

scoring the determined set of state provider services using the metadata relating to the state provider definition of the determined set of state provider services;

invoking the highest scoring state provider service, thereby generating state data;
and

passing the state data to the invoked service.
2. The method according to claim 1, further comprising:

storing, by the state provider management service in a metadata repository, for each

state provider service an invocation counter which is incremented by the state provider management service upon each invocation of the state provider service.

3. The method according to claim 1 or 2, further comprising:
upon finalizing an execution of the service, returning output values of the service to the state provider service from which the state data have been received.
4. The method according to one of claims 1 to 3, further comprising:
storing persistently the received state data by the state provider service from which the state data have been received.
5. The method according to one of claims 1 to 4, wherein the invoked state provider service becomes a first state provider service, the method further comprising:

upon determining that the invoked first state provider service requires a second state:

invoking a second state provider service, via the state provider management service;
determining a related set of input variables for the second state provider service;
determining of a set of matching second state provider services;
scoring the set of matching second state provider services;
selecting the highest scoring second state provider service, thereby generating second state data;
passing the second state data to the second state provider service; and
returning output values of an execution of the second state provider service as the second state.
6. The method according to one of claims 1 to 5, wherein the scoring the determined set of state provider services results in a set of highest scoring state provider services resulting in the same score value, the method further comprising:

invoking the set of highest scoring state provider services in parallel.

7. The method according to one of claims 1 to 6, further comprising:

measuring performance values for an executing the set of highest scoring state provider services; and
storing a respective performance value in the metadata of a respective state provider service.
8. The method according to one of claims 1 to 7, wherein the determining the set of state provider services further comprises:
determining the matching state provider service according to predefined rules on the metadata.
9. The method according to one of claims 1 to 8, wherein the determining the set of state provider services further comprises:

determining the matching state provider service according to a current workload profile in the cloud computing environment.
10. The method according to one of claims 1 to 9, wherein a highest scoring state provider service is determined according to a round-robin principle.
11. A state control system for controlling state updates in a cloud service environment, the state control system comprising:

a state provider registry module adapted for maintaining a set of state provider definitions by a state provider management service unit, wherein each state provider definition comprises a set of required input variable definitions, a set of output variable definitions and related metadata;

first determination means adapted for, upon invoking a service, determining a set of input variable definitions required by the invoked service;

wherein the state provider management service module is also adapted for receiving the determined set of input variable definitions;

wherein the state provider management service unit is also adapted for selecting a state provider definition by referring to the state provider registry, wherein the selected state provider definition is to be compatible with the received set of input variable definition;

second determining means adapted for determining a set of state provider services matching the selected state provider definition;

scoring means adapted for scoring the determined set of state provider services using the metadata relating to the state provider definition of the determined set of state provider services;

invocation means adapted for invoking the highest scoring state provider service, thereby generating state data; and

sending means adapted for passing the state data to the invoked service.

12. The state control system according to claim 11, wherein the state provider management service module is also adapted for storing, in a metadata repository, for each state provider service an invocation counter which is incremented by the state provider management service upon each invocation of the state provider service.
13. The state control system according to claim 11 or 12, further comprising:

returning means adapted for returning, upon finalizing an execution of the service, output values of the service to the state provider service from which the state data have been received.
14. The state control system according to one of claims 11 to 13, also comprising:

storage means adapted for storing persistently the received state data by the state provider service from which the state data have been received.

15. The state control system according to one of claims 11 to 14, wherein the invoked state provider service becomes a first state provider service, and wherein the state control system is also adapted for:

upon determining that the invoked first state provider service requires a second state:

invoking a second state provider service,
via the state provider management service module;
determining a related set of input variables for the second state provider service;
determining of a set of matching second state provider services;
scoring the set of matching second state provider services;
selecting the highest scoring second state provider service, thereby
generating second state data;
passing the second state data to the second state provider service; and
returning output values of an execution of the second state provider service as the second state.

16. The state control system according to one of claims 11 to 16, wherein the scoring means are also adapted for scoring the determined set of state provider services results in a set of highest scoring state provider services resulting in the same score value, thereby:

invoking the set of highest scoring state provider services in parallel.

17. The state control system according to claim 16, further comprising:

measurement means adapted for measuring performance values for an executing the set of highest scoring state provider services, and adapted for storing a

respective performance value in the metadata of a respective state provider service.

18. The state control system according to one of claims 11 to 17, wherein the second determination means adapted for determining a set of state provider services are also adapted for:

determining the matching state provider services according to predefined rules in the metadata.

19. The state control system according to one of claims 11 to 18, wherein the second determination means are also adapted for:

determining the matching the state provider services according a current workload profile in the cloud computing environment.

20. A computer program product for controlling state updates in a cloud service environment, the computer program product comprising a computer readable storage medium having program instructions embodied therewith, said program instructions being executable by one or more computing systems to cause said one or more computing systems to:

maintain a set of state provider definitions in a state provider registry by a state provider management service, each state provider definition comprising a set of required input variable definitions, a set of output variable definitions and related metadata;

upon invoking a service, determine a set of input variable definitions required by the invoked service;

receiving the determined set of input variable definitions by the state provider management service;

select, by the state provider management service, a state provider definition by referring to the state provider registry, wherein the selected state provider definition

is to be compatible with the received set of input variable definition;

determine a set of state provider services matching the selected state provider definition;

score the determined set of state provider services using the metadata relating to the state provider definition of the determined set of state provider services;

invoke the highest scoring state provider service, thereby generating state data; and

pass the state data to the invoked service.