

EnSight Update

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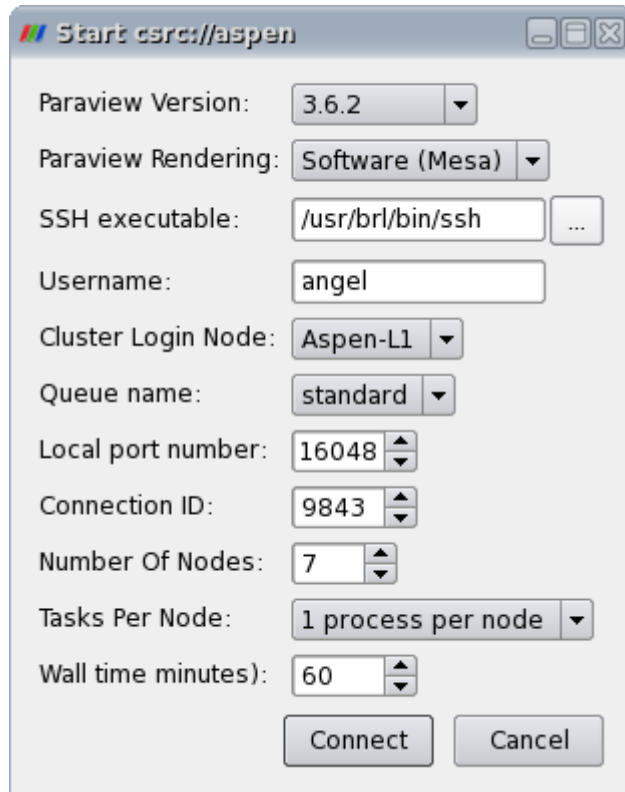


EnSight Update

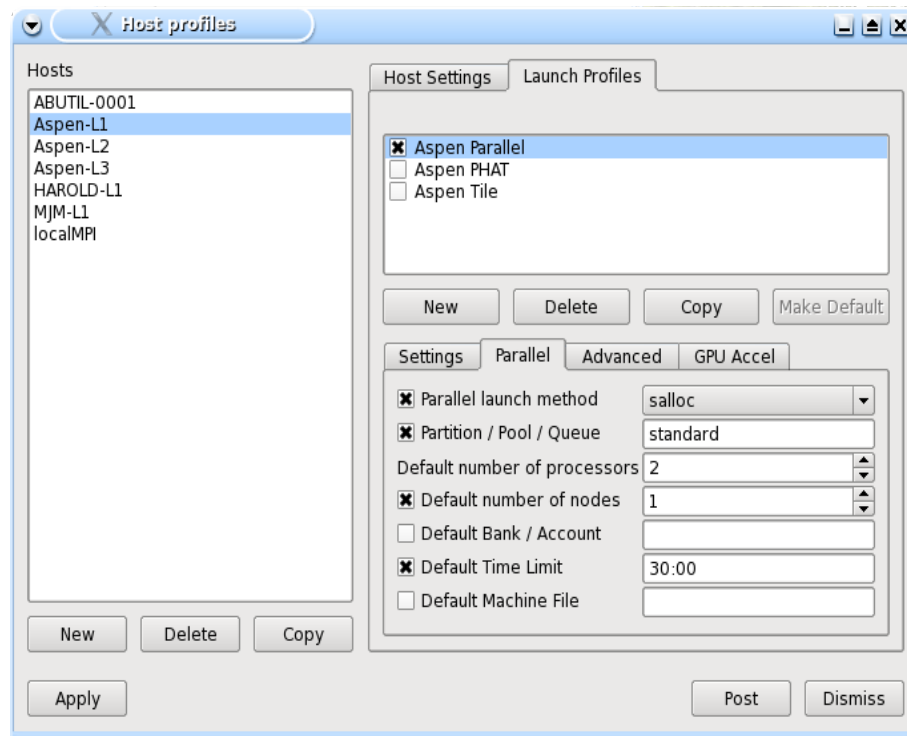
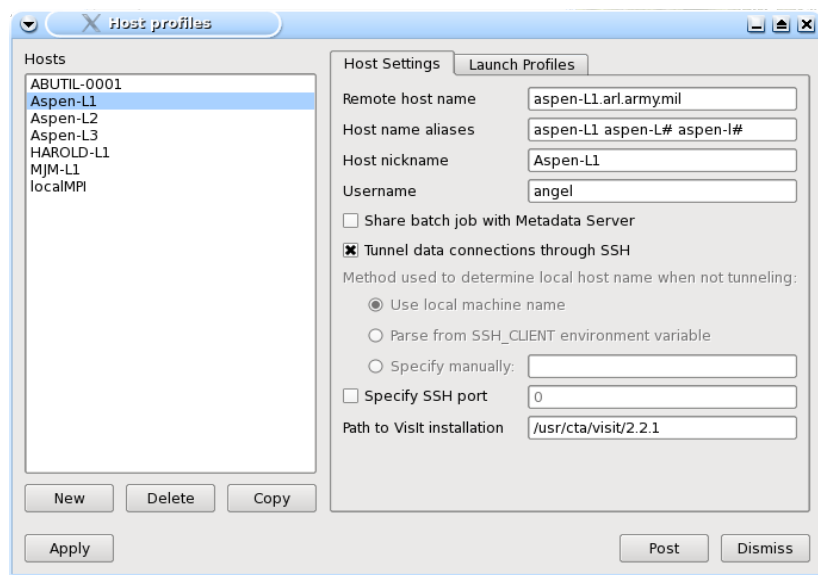
- Current Release 9.2 (9.2.2a)
- Recent updates focused on improved performance, user interaction with GUI (right-click functions)
- On-Line video tutorials (very useful)
- Supports HPC Job Launching
 - Not just convenient – REQUIRED
 - Launching distributed vis too difficult
 - ARL & LLNL pushed CEI (others?)

HPC Job Launching

- ParaView: Connection Definition Files
 - XML-based, Flexible
 - Fully configurable GUI content/fields, etc
 - Locally (servers.pvsc) and globally defined (default_servers.pvsc) configurations



HPC Job Launching



- VisIt: Host Profiles
 - Many hosts and launch methods are pre-defined
 - Great implementation for known hosts
 - New hosts primarily defined through VisIt user interface
 - No real ability to change GUI content/fields, etc
 - Difficult to add new launch method
 - Tweaks made through internal launcher script

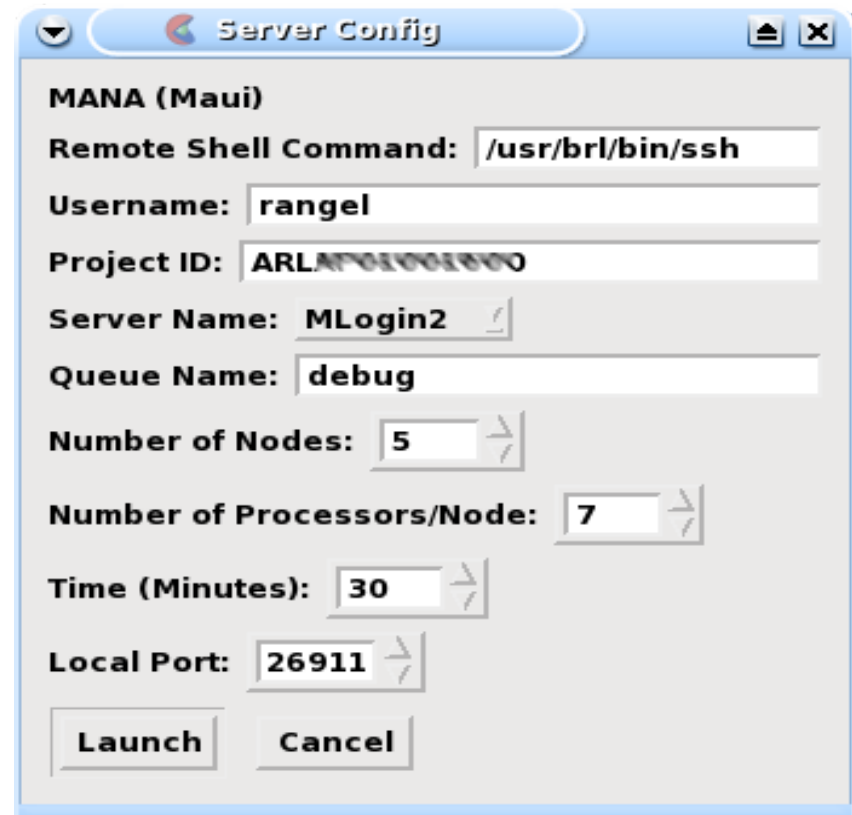
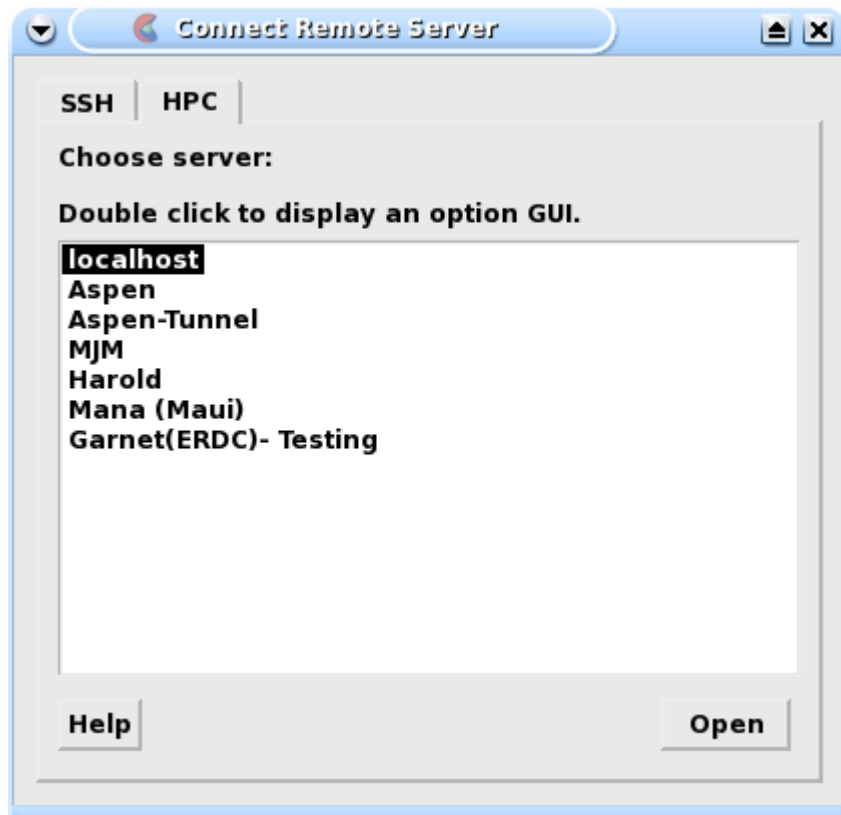
EnSight HPC Job Launching

- Python-based launch profile definition
 - Defines GUI layout, fields, etc
- Provides flexibility to call additional python or shell scripts to establish distributed environment
- Launch profiles are separate and independent of each other
- Locally & globally defined profiles
- Uses CEISHELL process to coordinate communication between components

CEISHELL

- New underlying communication methodology
- Optional – traditional EnSight communication layer still exists – but ceishell required for HPC job launching
- Ceishell(s) start up first and establish communication path
- Ceishell is a serial process
- Host-independent ceishell launch method on allocated HPC nodes
 - aprun (Cray)
 - mpirun (Linux Cluster)

EnSight HPC Job Launching Client-Side



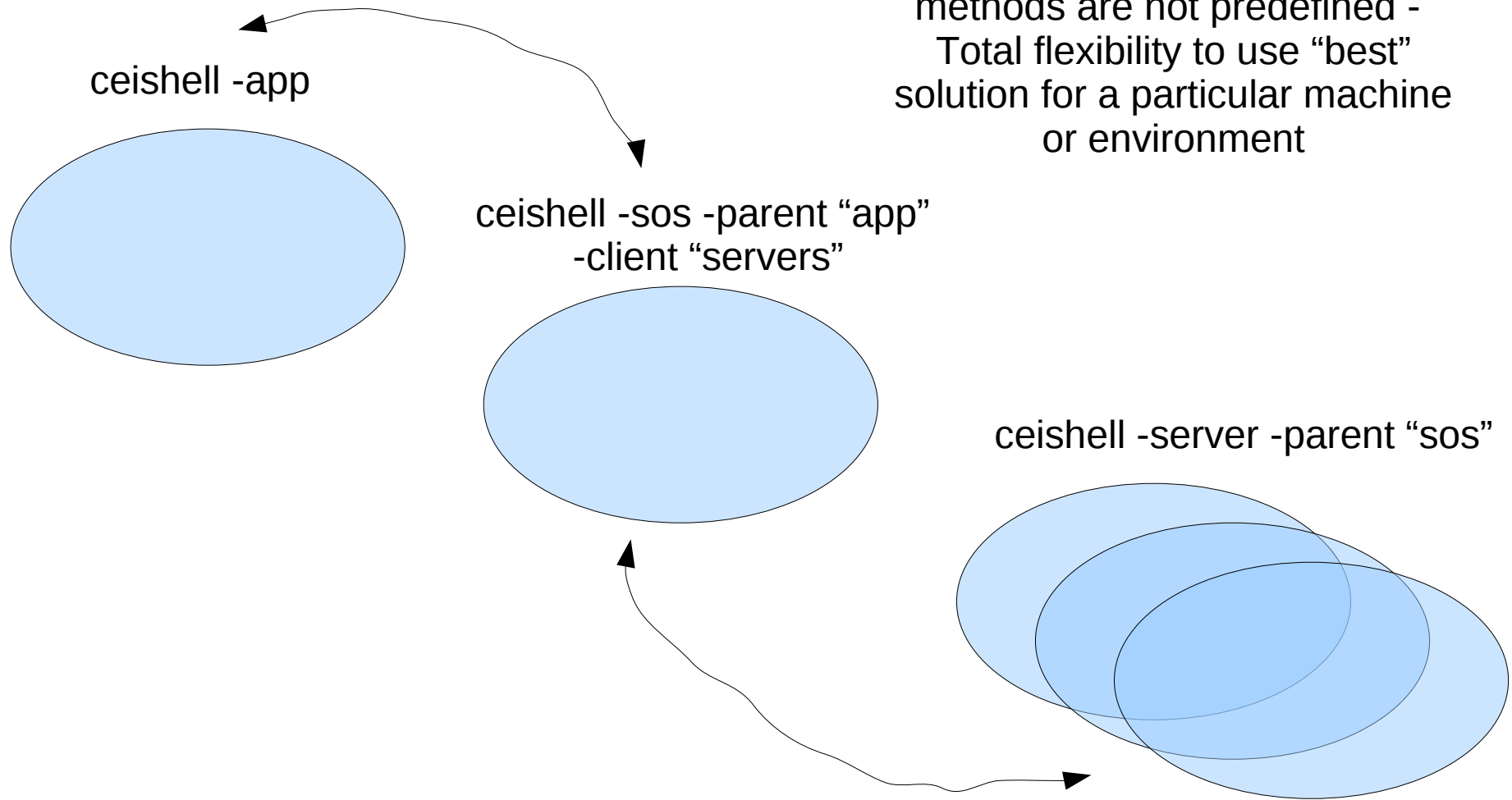
Totally customized server definition

Python Configuration File

```
#!/usr/bin/env cpython22
from cei.qtgenericdlg import *
.
.
.
config = [
    { 'server_name': 'HPCXXX',
      'gui': [
          [['title', ITEM_TEXT, "HPCXXX (ARL)", ""], False],
          [['remote_shell', ITEM_STR, "Remote Shell Command:", "Remote Shell Command", default_shell], True],
          [['username', ITEM_STR, "Username:", "Username", ""], True],
          [['projectid', ITEM_STR, "Project ID:", "Project ID", ""], True],
          [['servername', ITEM_COMBO, "Server Name:", "Select a server name", "HPCXX-L1", ["HPCXX-L1", "HPCXX-L2",
"HPCXX-L3", "HPCXX-L4", "HPCXX-L5", "HPCXX-L6", "HPCXX-L7", "HPCXX-L8"]], True],
          [['queue_name', ITEM_STR, "Queue Name:", "Select a queue", "debug"], True],
          [['num_nodes', ITEM_INT, "Number of Nodes:", "Enter Number of Nodes", 2, 2, 1100], True],
          [['num_procs', ITEM_INT, "Number of Processors/Node:", "Enter Number of Processors on each node", 1, 1,
4], True],
          [['walltime', ITEM_INT, "Time (Minutes):", "Amount of time to run (in Minutes)", 15, 1, 4000], True],
          [['localport', ITEM_INT, "Local Port:", "Enter a TCP/IP port number", "random", 1024, 65535], False],
      ],
      'commands': [
          ['system', 'cpython22 ' + os.path.join(CEI_PATH, 'hpcxx.py') + ' \"$remote_shell$\" $username$
$projectid$ $servername$ $queue_name$ $num_nodes$ $num_procs$ $walltime$ $localport$ \"$security_option$\"', True]
      ],
      'connect_url':
          'connect://localhost?timeout=-1'
    },
]
```

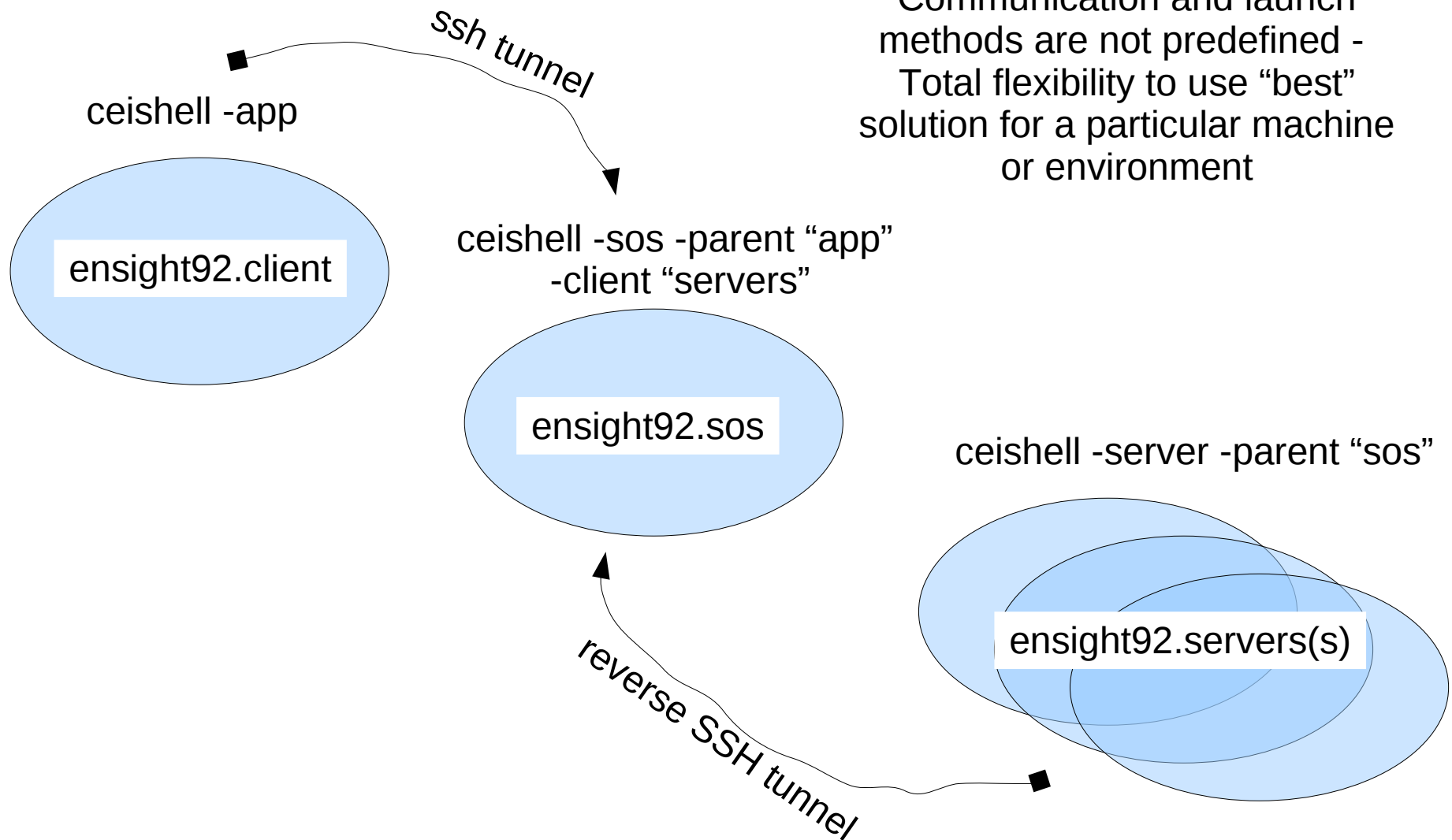

EnSight HPC Job Launching

Communication and launch methods are not predefined -
Total flexibility to use “best”
solution for a particular machine
or environment



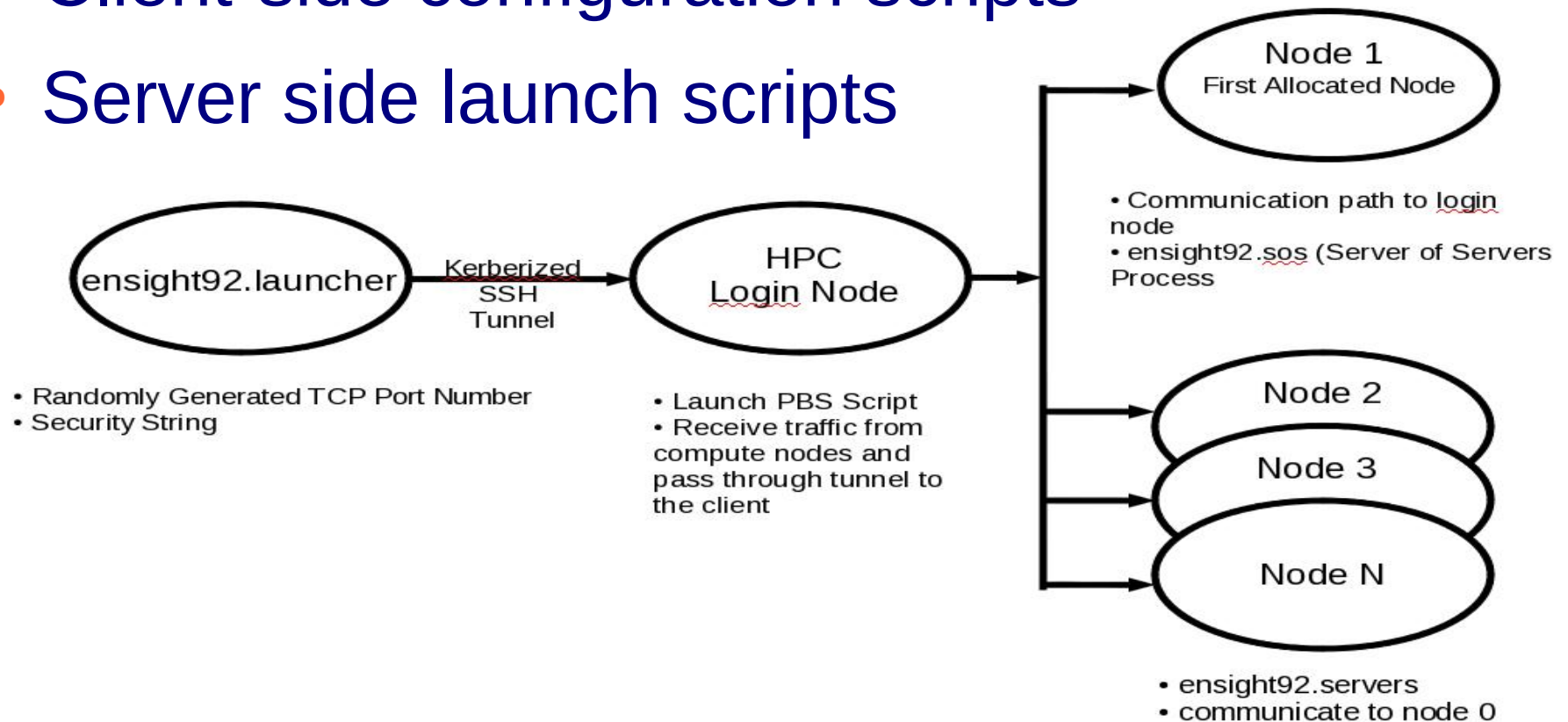
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EnSight HPC Job Launching

- Client-side configuration scripts
- Server side launch scripts



EnSight HPC Job Launching

- Yet to be determined
 - Scalability?
- https://visualization.hpc.mil/wiki/EnSight_HPC_Job_Launching