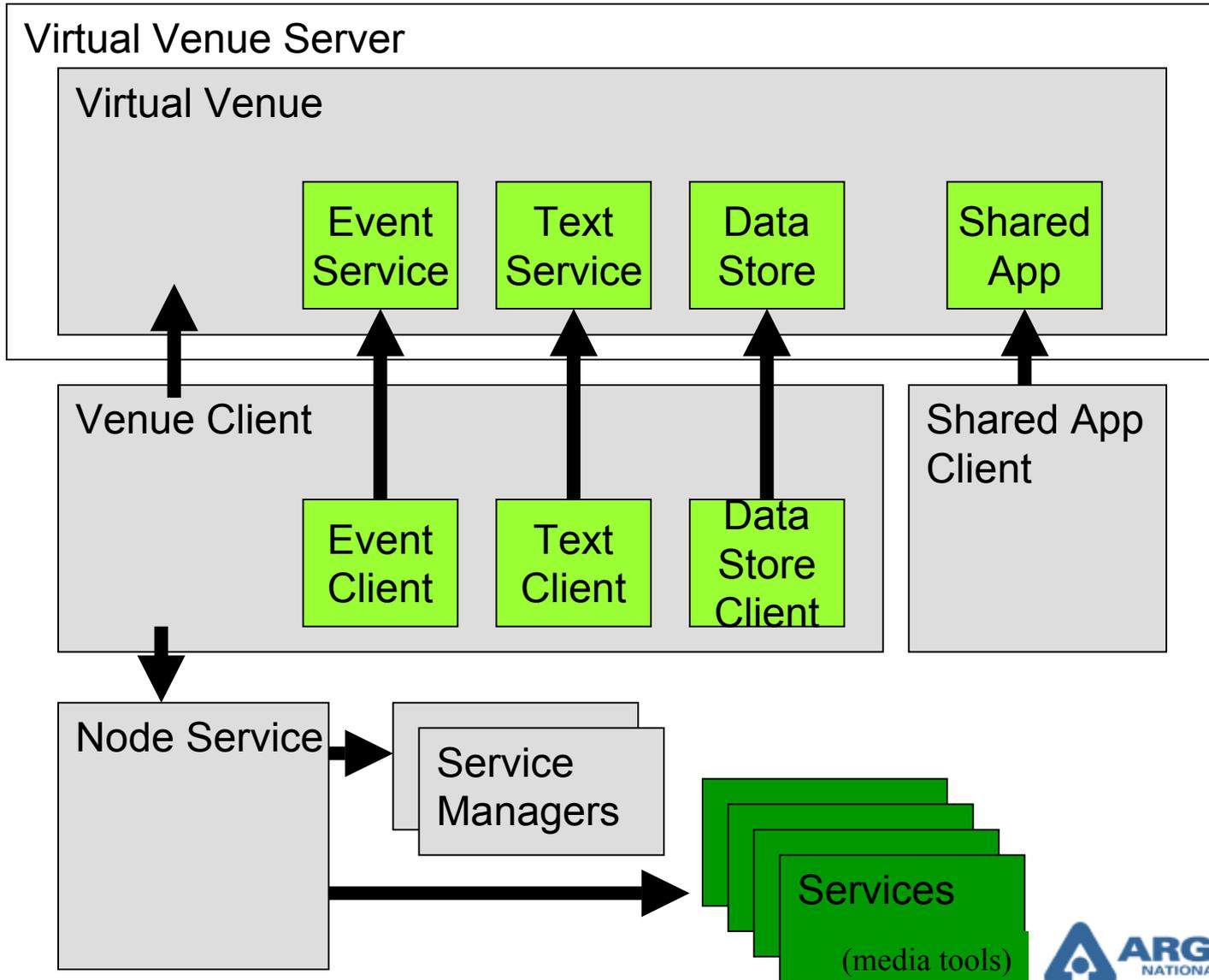


# Access Grid Node Services

Thomas Uram  
Argonne National Laboratory



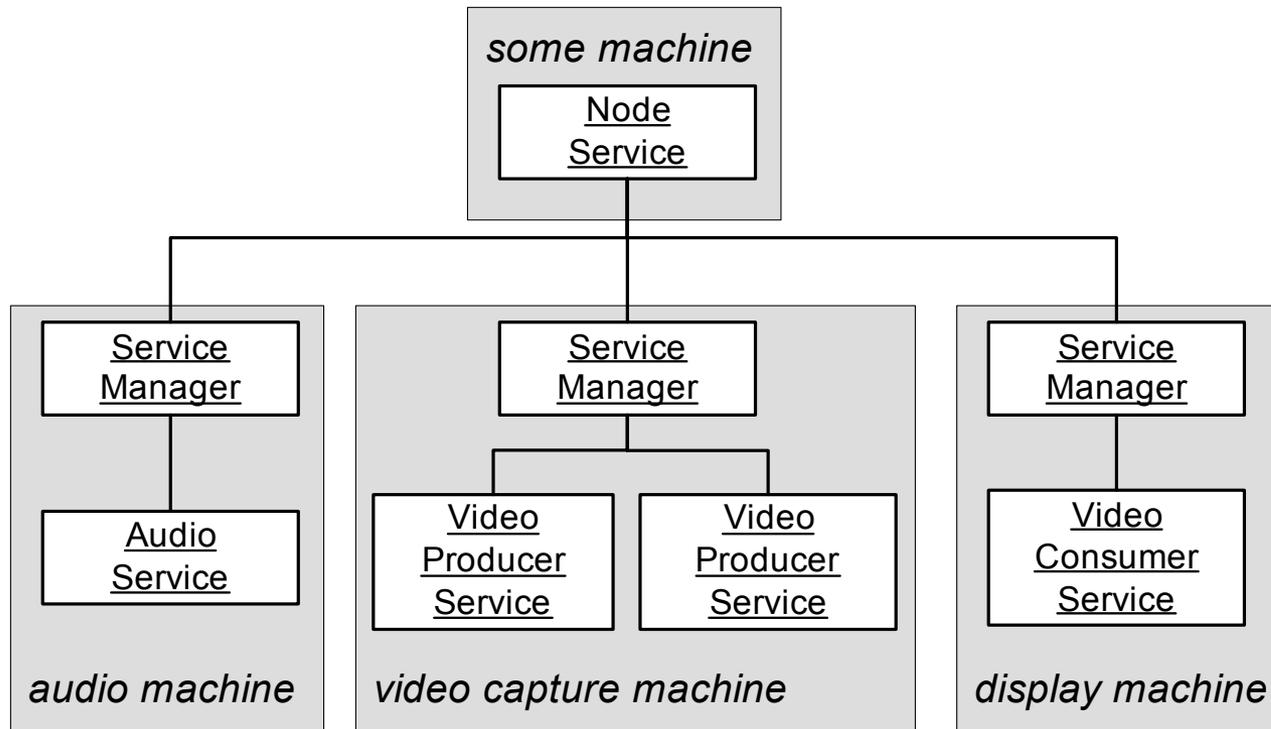
# Overview



# Requirements

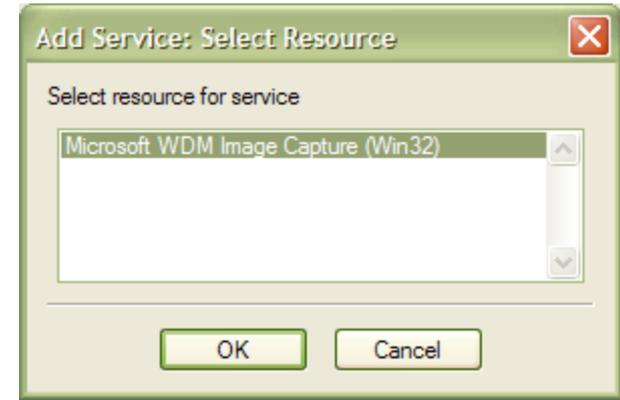
- Expose machine resources through service interface
  - audio in/out
  - video capture
- Expose service configuration interfaces
- Allow addition of new services, updates to existing services

# Architecture



# Functions of a Service

- Utilize machine resources
  - currently only video resources
- Describe capabilities
- Configurability



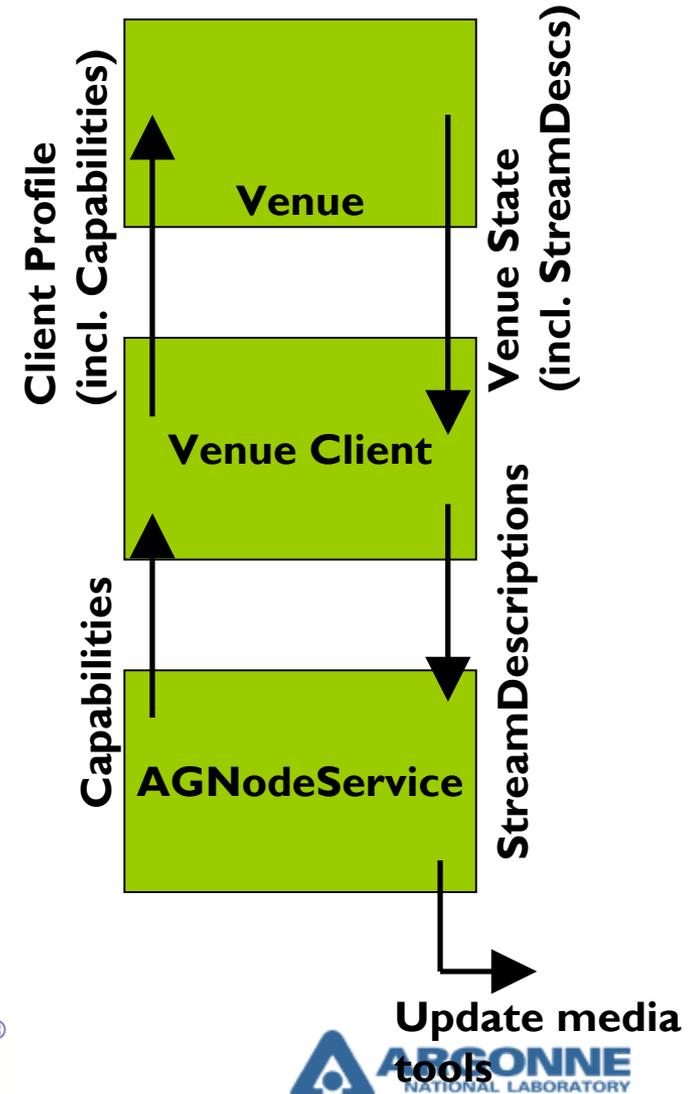
# Service Capabilities

- In 2.x, capabilities are defined trivially:
  - role (producer, consumer)
  - type (string)
    - code defines specific capability types (TEXT, VIDEO, AUDIO), but any string will do



# Service Capabilities

- On Enter:
  - The capabilities of the node are collected and passed to the venue
  - The venue allocates a stream (multicast group) for each producer capability of a yet non-existent type
  - The venue returns a stream (multicast group) for each existing consumer capability type
  - The returned streams are passed down to the services



# Service Configurability

- Service configuration is defined in terms of AGParameter types:
  - ValueParameter
  - TextParameter
  - OptionSetParameter
  - RangeParameter
- These types are represented in Node Management with appropriate GUI (e.g. OptionSetParameter by a combo box)



# Service API: All methods

- GetCapabilities()
- Start()
- Stop()
- ConfigureStream(streamDescription)
- GetConfiguration()
- SetConfiguration(configuration)
- GetEnabled()
- SetEnabled(enabled)
- GetResource()
- SetResource(resource)
- IsStarted()
- SetIdentity(profile)
- Shutdown()

# Service API: Core methods

- **GetCapabilities()**
  - Return list of service capabilities (set in `__init__`)
  - Called by venue client during venue entry
- **Start()**
  - Start service operation (e.g. run vic)
  - Called internally when service is enabled (and possibly during stream updates)
- **Stop()**
  - Stop service operation (e.g. stop vic)
  - Called when service is disabled
- **ConfigureStream(streamDescription)**
  - Handle updates to stream (multicast group)
  - Called by venue client during venue entry

# Service Packages

- Node Services are provided as packages
- The package is a zip file containing:
  - a .svc file that describes the service

```
[ServiceDescription]
name = VideoProducersService
description = vic-based video service to send video to multicast address
capabilities = Capability1
executable = VideoProducersService.py
platform = neutral
version = 2.4

[Capability1]
role = producer
type = video
```

- an implementation file
- supporting files

# Service Installation

- Install new service packages by either:
  - `agpm.py -z ServicePackage.zip`
  - `cp ServicePackage.zip SYSCONFIGDIR/NodeServices`



# DebugService

- Example service from Node Service Developers Manual

```
def __init__(self)
    # Set capabilities
    self.capabilities = [ Capability( Capability.CONSUMER,
                                    Capability.AUDIO ),
                        Capability( Capability.CONSUMER,
                                    Capability.VIDEO ),
                        Capability( Capability.PRODUCER,
                                    "debug" ) ]

def start(self):
    self.log.debug("DebugService.Start")

def stop(self):
    self.log.debug("DebugService.Stop")
```



# DebugService

```
def configureStream(self, streamDescription):
    self.log.debug("DebugService.ConfigureStream %s
                    \"%streamDescription\")
    if self.param1.value == "On":
        self.log.info("DebugService.ConfigureStream: value
                        parameter is on!")
```

DebugService.zip package available here:

[http://www.mcs.anl.gov/fl/research/accessgrid/documentation/  
NODE\\_SERVICES\\_MANUAL/DebugService.zip](http://www.mcs.anl.gov/fl/research/accessgrid/documentation/NODE_SERVICES_MANUAL/DebugService.zip)



# AG3 Changes

- Bonjour (formerly Rendezvous)
  - for NodeService and ServiceManager, not Services (yet)
- Push resource discovery out to services
  - allow services to discover their own resources
- Additional messages to services
  - Startup
  - Enter venue
  - Shutdown



# Further Information

- AG Developer documentation page

<http://www.mcs.anl.gov/fl/research/accessgrid/documentation/developer.html>

- Node Service Manual
- API Reference



# Questions?

