BIM Cloud Workspace on Azure, Citrix and NVIDIA GRID

From idea to implementation
Engineering

FOUNDED IN 1932

COMMERCIAL & HOUSING BUILDERS

CONSTRUCTION

5600 PERMANENT EMPLOYEES

MAINTAIN

WE MAKE BUILDINGS SMARTER

Infrastructure

DEVELOPMENT

€1,6 billion

OPERATING INCOME

TBI
A'DAM TOREN

AMSTERDAM

COMPLETED

TRANSFORMATION
CENTRAL STATION

ROTTERDAM COMPLETED TRANSFORMATION
MAKE CONSTRUCTIONS SMARTER
MAKE CONSTRUCTIONS SMARTER
Challenges
Challenges
Workplace
Working from everywhere

Working at Home
They have several challenges that they need a solution to resolve:

• TBI have a low technology environment that is predominantly analogue and relies heavily on old processes and paper.
• TBI want to have a cloud-only common data environment, and comply with BIM Maturity Level 3 by 2020.
• BIM users need to work anywhere, everywhere, and anytime.
• TBI want to onboard new users in 5 minutes using self-service.
• Project sites often don’t offer good network bandwidth for dealing with large BIM models.
• Huge project models tend to be split across different locations, leading to higher risk of errors.
• TBI need to offer a cutting edge digital solution to clients.
• TBI want to remove their IT CAPEX to leave just IT OPEX, which is rechargeable to projects.
THE SOLUTION
SOLUTION
Run Any Engineerings Software or Service in a Browser from the Cloud anywhere, anytime, everywhere.
CONSUME SERVICES LIKE A CANDY STORE
WORKS ON ANY DEVICE!
(EVEN A RASPBERRY PI)
BIM CLOUD WORKSPACE | IMPRESSIONS

BIM Cloud Workspace
(Windows 10, N-series)

BIM Glue 360
BIM CLOUD WORKSPACE | IMPRESSIONS

InfraWorks 2017

Revit 2017
SOLUTION COMPONENTS | 3RD PARTY APPS

Cloud Applications

BIM 360

Engineering Applications

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RES ONE Service Store homepage

The personalized “My Store”
The N-series is a family of Azure Virtual Machines with GPU capabilities. GPUs are ideal for compute and graphics-intensive workloads, helping customers to fuel innovation. The N-series will feature the NVIDIA Tesla accelerated platform, as well as, NVIDIA GRID 6.0 technology, providing the highest-end graphics support available in the cloud today.

Machine configuration:
- Windows 10
- Intel Xeon E5 2690
- 56GB RAM
- NVIDIA GRID M60
- 512 GB SSD HD

More Information:
The NVIDIA GRID solution runs on top of award-winning, NVIDIA Maxwell -powered GPUs. The NVIDIA® Tesla® M60 GPU accelerator works with NVIDIA GRID™ software to provide the industry's highest user performance for virtualized workstations, desktops, and applications. This solution allows enterprises to virtualize any application including professional graphics applications and deliver them to any device, anywhere.

More Information:
The Citrix Cloud allows management and delivery of Windows 10 Current Branch for Business (CBB) virtual desktops from Microsoft Azure. XenDesktop Essentials Service is the first Citrix Cloud service designed specifically for the Azure Marketplace. Citrix and Microsoft are partnering to deliver an integrated experience for XenDesktop and Azure IaaS. This partnership gives you a single interface to deliver a complete Windows 10 digital workspace from Azure.

Included components:
• Citrix XenDesktop
• Netscaler

More Information:
https://www.citrix.com/products/citrix-cloud/
Presentation

Citrix Monitoring and Profiling

Marc Sleegers, Technical Consultant
Thomas Poppelgaard, Technology Evangelist
Autodesk Consulting
Diversity in BIM Application landscape

200 Autodesk Applications

27 Autodesk Applications
40 Plugins

<Confidential> See Avanade’s Data Management Policy
TBI | Flexible Workspace Set-Up

**Building**
- Building, Design and Modelling
  - Applications
  - Guest OS
  - Language/Country settings
  - Plugins
  - Windows 10
  - United Kingdom/ENU
  - Revit Extensions, IFC exporter

**MEP**
- Building, Design and Modelling
  - Applications
  - Guest OS
  - Language/Country settings
  - Plugins
  - Windows 10
  - Netherlands/ENU
  - Stabicad, Revit Extensions IFC exporter

**Infrastructure**
- Infrastructure, Water, Industry
  - Applications
  - Guest OS
  - Language/Country settings
  - Plugins
  - Windows 10
  - Germany/DEU
  - Civil Country Kit Germany Productivity pack

**Visualization**
- Applications
  - Guest OS
  - Language/Country settings
  - Plugins
  - Windows 10
  - Netherlands/ENU
Evolution of the BIM Cloud Workspace

**Environment**
- CAPEX based
- 3-5 years lifetime
- Hard to scale

- Azure, Citrix & Nvidia
- Fixed set of BIM applications
- Geo Availability
- Additional Identity

- Azure, Citrix & Nvidia
- Dynamic set of BIM applications & Modules
- Single Sign On
- Cost control & optimization and reporting
- Optional Identity Federation

- Native Federated Cloud Identities and social logons
- Collaborative hybrid data platform
- Rationalized versions of applications and modules

**SaaS**
- Automated ‘everything’
- True Software as a Service provisioning

- Delivery of maintenance, updates and releases of the environment
- Lifecycle management
- Continuously adopt Azure innovations

<Confidential> See Avanade’s Data Management Policy
Decoupling the applications

Flexible, layered, user profiles and deployment services to accommodate different user types, application and project requirements, including version and module differentiation, optimizing application license usage, and supporting specific project requirements (based on standardized layers).

Under the hood of the BIM Cloud Workspace, applications are decoupled from OS, middleware and drivers, allowing fast release of new versions or run different versions of applications in parallel.

This gives great flexibility in choice of BIM applications and add-ons for different projects without needing to worry about cross-project dependencies, such as version conflicts or upgrading models.
BIM Cloud Workspace

- Use any device
- At any location
- At any scale
ADVANTAGES FOR TBI

OLD

OWNER

ADMINISTRATOR

END USER

NEW

END USER

ADMINISTRATOR

OWNER
PERFORMANCE TEST | REVIT BENCHMARK TEST (RFO)

BIM Cloud Workspace
Azure N-Series, Windows 10, 56GB RAM,
NVIDIA GRID M60, Intel® Xeon® E5 2690, 512 GB SSD HD

RVT 2017 - Standard set - 2017.03.06 @ 20.20.42 on AMSWINGPU6001
RFO Benchmark v3.0 (build 17.10.2016)
RevitForum.org

All times are in seconds, lower is better.

Run on Autodesk Revit 2017.0.3 Security Fix

Update
19.22 update previous version file

Model creation benchmark
5.00 opening and loading the custom template
18.72 creating the floors levels and grids
36.57 creating a group of walls and doors
66.97 modifying the group by adding a curtain wall
20.06 creating the exterior curtain wall
13.91 creating the sections
6.93 changing the curtain wall panel type
17.71 creating area plans
2.67 creating and applying view template
186.56 TOTAL

Sample BIM Workstation
HP Z840 Workstation, Windows 10, 32GB RAM,
NVIDIA P5000, Intel® Xeon® E5 2600, 512 GB SSD HD

RVT 2017 - Standard set - 2017.03.06 @ 20.18.03 on C0049923MAC2
RFO Benchmark v3.0 (build 17.10.2016)
RevitForum.org

All times are in seconds, lower is better.

Run on Autodesk Revit 2017.1.1

Update
15.38 update previous version file

Model creation benchmark
6.03 opening and loading the custom template
32.32 creating the floors levels and grids
43.89 creating a group of walls and doors
57.57 modifying the group by adding a curtain wall
33.56 creating the exterior curtain wall
29.45 creating the sections
0.57 changing the curtain wall panel type
41.92 creating area plans
3.82 creating and applying view template
258.13 TOTAL

VS
ADVANTAGES FOR TBI
THE PROMISE OF THE BIM CLOUD WORKSPACE

✓ A cloud only high end graphics workspace solution for any Autodesk product for medium to large size enterprise accounts
✓ Allows rapid deployment (below 5min) of user on any project
✓ Centralized and connected BIM 360 Common Data Environment for the “Next Generation of Collaboration”
✓ No customer IT involvement
✓ Allows workspace access from anywhere, anytime on any device (even on a Raspberry PI) and supports in the era of connection the “Next Generation Collaboration”
✓ Allows to have secure, standardized, flexible workspace with a localized or globalized context to support 75+ Autodesk applications including addons
✓ All costs are OPEX and easy to recharge on any project
✓ Allows to run solution as self-service with 80% proactive delivered services
✓ A cutting-edge solution for leaders in digitalisation to drive BIM adoption
✓ Higher performance than a typical BIM designer desktop and allows to work anywhere on very large BIM models with very low bandwidth requirements which was not possible before
Innovation requires Change

Innovation is driven by three forces:

- Business Process
- People
- Technology

Innovation “Sweet Spot”
Ideas come from anywhere.